

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

LOWER COOK INLET AREA
ANNUAL FINFISH MANAGEMENT REPORT

1986



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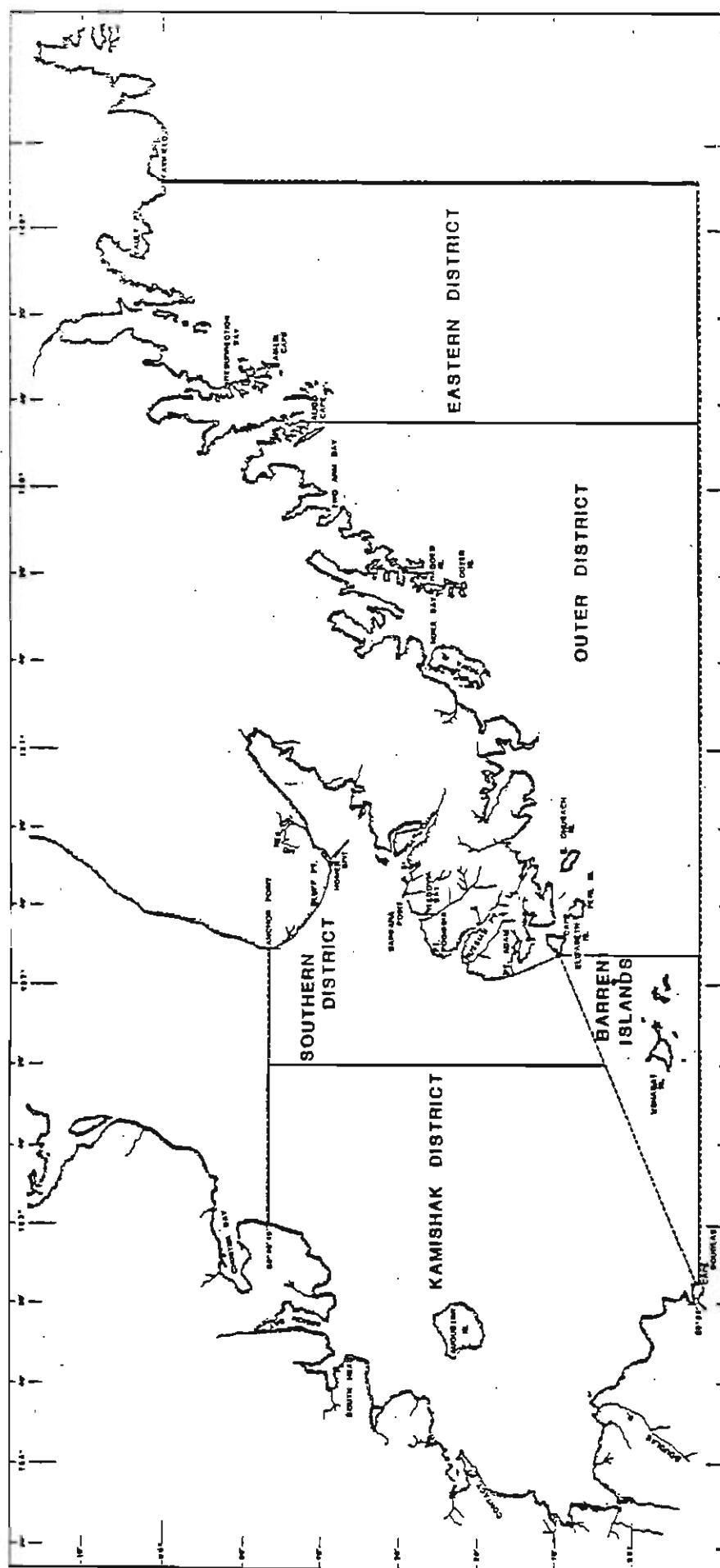


Figure 1. Lower Cook Inlet Management Area.

ANNUAL MANAGEMENT REPORT
LOWER COOK INLET
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COMMERCIAL SALMON FISHERY

INTRODUCTION

The Lower Cook Inlet management area is comprised of all waters west of the longitude of Cape Fairfield, north of the latitude of Cape Douglas and south of the latitude of Anchor Point and has been divided into five fishing districts (Figure 1). The Barren Islands district is the only non-salmon and herring producer and the remaining four districts have been divided into 25 subdistricts and sections to facilitate management of discrete stocks of salmon and herring.

The 1986 commercial salmon fishery in Lower Cook Inlet can be considered a tremendous success. Total harvest for all species of 1,745,490 fish was 74 percent above average and was the largest even year harvest since 1962 and the fourth highest on record (Table 1, Appendix Table 15 and Figure 2). Sockeye harvests were above average in the Outer and Kamishak Bay districts and the 234,861 fish harvest was the third highest on record and over three times the average (Table 1, Appendix Table 21 and Figure 3.) The large sockeye salmon harvest was 80 percent above the pre-season forecasted harvest of 130,000 fish and was due primarily to the 111,000 sockeye harvested at Chenik Lake and the 48,000 fish taken in Nuka Bay, near Delight and Desire Lakes. The Nuka Bay harvest was 15-20,000 fish

higher than anticipated.

Pink salmon returns were sporadic with seven streams producing virtually the entire Lower Cook Inlet harvest. The pink salmon harvest of 1,408,293, almost double the 30 year average, was the largest even-year harvest since 1962 (Table 1, Appendix Table 23 and Figure 4).

Natural run pink salmon returns were generally below forecasted levels, with the Resurrection Bay harvest of 40,000 fish being 70 percent below the forecasted harvest, but was somewhat expected due to the abbreviated rearing program at the Tutka Hatchery in 1985. Strong returns to Port Dick and Desire lake in the Outer district and a phenomenal return of approximately 1.6 million fish to Bruin Bay and Rocky Cove in the Kamishak district took up some of the slack in the natural production. The total pink salmon harvest of 1,408,293 was 33 percent below the pre-season projected harvest of 2,098,500.

The chum salmon harvest of 82,688 was half of the pre-season projected harvest and 34 percent below average (Table 1, Appendix Table 24 and Figure 5). Poor chum salmon returns from good escapements in 1981 were believed to be related to ocean survival conditions, which persisted in 1982 and 1983, resulting in low returns of five year old fish. The coho salmon harvest of 18,852 fish was over twice the average for Lower Cook Inlet and catches occurred primarily in the Outer and Kamishak Bay districts (Table 1 and Appendix Table 22).

Approximately 62 seine and 34 set gillnet permits were fished in Lower Cook Inlet during the 1986 season. The ex-vessel value of the harvest was estimated at \$2.735 million (Appendix Table 2), but may increase an additional \$0.2 - 0.3 million after retroactive settlements occur on the pink salmon price next spring. Pink salmon prices were similar to 1985 prices, but began increasing in the latter part of the season due to lower harvests in some areas of the State (Appendix Table 3). Sockeye salmon prices increased over 1985 and remain at a very high level and, coupled with large catches, resulted in sockeye comprising almost half of the ex-vessel value (Appendix Tables 2 and 3).

SOUTHERN DISTRICT

Sockeye Salmon

The Southern district sockeye salmon harvest of 36,838 fish was seven percent below average, but was due to below average set net catches (Table 1 and Appendix Tables 14 and 16). The set gillnet harvest of 21,807 was 15 percent below average and was a direct result of the poor return to the English Bay Lake system and the extended fishing closure in that area.

This year marked the second consecutive failure in the English Bay Lake sockeye return. Subsistence gillnet catches in May and early June again gave a strong indication of the weak return (Tables 11 and 12). Aerial surveys of escapement levels further substantiated the weak return as no fish were observed in the lake system on June 9 and 13. The Port Graham subdistrict was closed to commercial set gillnet fishing on June 14 and remained closed for an entire month until July 14. Even with the extended closure only 2,800 sockeye were estimated to have reached the lake, far below the escapement goal of 10,000-20,000 fish (Table 4).

Sockeye returns to the Leisure Lake stocking project in China Poot Bay were greatly reduced from the previous three years. Most of the seine harvest of just over 15,000 sockeye came from this return in the China Poot subdistrict, with some of this return being intercepted by seiners in Tutka Bay. The China Poot subdistrict was opened to fishing on June 26 and fishing

was allowed up to the creek mouth as usual. Fishing effort was low compared to past years due to the forecasted return of only 12,000 fish. Only two boats fished the area continuously throughout the season.

Pink Salmon

The Southern district pink salmon harvest of 542,521 was 73 percent above average (Appendix Table 16). Tutka Bay produced 74 percent of the harvest with Humpy Creek accounting for 22 percent (Appendix Table 11).

The Tutka Bay subdistrict was opened to fishing on June 26. While the hatchery return was 20 percent below forecast, the harvest of over 400,000 pink salmon was the largest even-year harvest on record and 30 percent above the previous even-year record harvest of 308,000 (Tables 6 and 7). Only three lagoon openings were necessary to harvest fish which were excess to hatchery brood-stock and natural escapement requirements. The first opening in the lagoon occurred on July 10 to harvest fish which contained a very high percentage of males. Subsequent openings were allowed as hatchery brood-stock and natural escapement requirements were achieved. Reduced and dispersed fishing effort resulted in 25 percent of the Tutka Bay harvest being taken during the three lagoon openings (Table 7).

The Humpy Creek subdistrict was opened to seining on July 15 after a ground survey on July 14 indicated the pink salmon escapement had increased to over 9,000 fish. An aerial survey

on July 15 indicated that the escapement had increased to 29,000 fish and the fishing markers were immediately moved into the creek in an attempt to slow the rate of escapement into the creek. The escapement of 49,700 fish (Table 2) was excellent and at the upper end of the escapement range. Approximately 103,000 of the 116,700 pink salmon harvest in the Humpy Creek statistical area came from the Humpy Creek return and was the largest even-year harvest on record (Appendix Table 11). Only two to three boats fished the area during the season and even this effort was quite sporadic. The remainder of the Humpy Creek statistical area pink salmon harvest of 13,700 fish came from the China Foot Bay sub-district.

The Seldovia Bay and Port Graham Bay subdistricts were opened to seining on July 17 after aerial surveys indicated significant accumulations of pink salmon had occurred inside closed water areas. Virtually no seine effort occurred in Seldovia Bay and the 2,800 pink salmon harvest was taken by set gillnets in the area. Only two vessels fished Port Graham Bay in late July and early August and caught just over 2,800 fish. The remainder of the subdistrict pink salmon harvest of 8,800 fish came from set gillnets, primarily near the village of English Bay. Escapements to these two rivers were considered good. Even though the Port Graham escapement was below the lower end of the escapement range (Table 2), it was still 18 percent above average.

Miscellaneous Species

Chum salmon returns to the Southern district were very poor and were probably indicative of ocean survival conditions that affected pink salmon returns in 1983 and 1984. The harvest of 5,560 fish was only half of the average for this district (Appendix Table 16) and the Tutka Bay harvest of 3,900 fish was far below the 20,000 expected return to the Tutka Hatchery (Appendix Table 12). The Port Graham River return was also extremely weak. Only 800 fish were caught in this area and the escapement of 600 chum salmon was far below the range of 4,000 8,000 (Table 3).

The coho salmon harvest of 3,095 was 15 percent below average for the district (Appendix Table 16). Set gillnets accounted for 91 percent of the harvest and the catch by set gillnets was 33 percent above average (Appendix Table 14). This lower harvest represents a decreased production trend over the past four years when compared to the strong return years of 1979 - 1982 (Appendix Tables 14 & 16).

OUTER DISTRICT

Sockeye Salmon

The Outer district sockeye salmon harvest of 48,472 was the third highest on record and was triple the average harvest for this district (Table 1 and Appendix Table 17). Delight and Desire Lakes in the East Nuka subdistrict produced the entire catch which followed along the increased harvest trend since 1976.

Delayed run timing, similar to 1985, was evident again in 1986. Aerial surveys of Delight and Desire lakes began on June 13 and few fish were observed at either location until June 23. Over the past 10 years, the East Nuka subdistrict has been opened to seining between June 20 and June 27 and the return to Desire Lake has always appeared to be 7-10 days ahead of the Delight Lake return. Management strategy over this same period of time has been to achieve an escapement of 3,500 - 4,000 fish at Desire lake and 2,500 - 3,000 in the lagoons at Delight Lake before opening the subdistrict.

The first opening in 1986 was a 24 hour opening on July 4-5 to assess the run strength. Surveys on July 2 and 3 indicated a buildup of fish at both lakes, but escapements were only 1,500 and 3,200 at Desire Lake and Delight Lake, respectively. Weather conditions had been hampering aerial surveys in the area, but it was still obvious that the run was either weak or extremely late. Seventeen vessels were present for the opening

which kept a one mile radius closure around the mouth of Desire Creek. McCarty Lagoon, located at the outlet of Delight Creek, was opened to fishing during this opening and most of the harvest occurred from the Delight Lake sockeye return.

By July 8, escapements had increased to 3,500 at Desire Lake and 4,000 at Delight Lake and the subdistrict was reopened on July 9 with fishing allowed in McCarty Lagoon. Escapements were considered to be higher than those actually observed during the July 8 surveys due to poor survey conditions. A follow-up survey on July 10 confirmed this as escapement levels had built to 9,200 and 10,700 at Desire and Delight, respectively. The markers at Desire Creek were removed and fishing allowed seven days per week on July 10, but markers at Desire were reimplemented on July 24 to achieve the desired pink salmon escapement in Desire Lake Creek. Good sockeye catches occurred at both lakes until mid-August. Sockeye salmon escapements of 10,000 and 13,000 to these two lakes were both considered excellent (Table 4).

Pink Salmon

Pink salmon returns to the Outer district were not expected to be strong, except in the Port Dick Bay area, based on escapements in 1984 and recent cyclic returns. Port Dick and Island Creek returns accounted for 304,000 of the total district pink salmon harvest of 401,755 (Table 1). The remainder, approximately 97,800 fish, were taken in the East Nuka

subdistrict near Desire Lake Creek. The Outer district harvest was just slightly below the average harvest for this district, but was the largest even-year harvest since 1964 (Appendix Table 17).

Pink salmon harvests in the Outer district began during the sockeye fishery in the East Nuka subdistrict in mid July. The incidental harvest had reached 12,000 fish by July 24 due to seven day per week fishing for sockeye salmon and the removal of the closed water markers at Desire Creek. Less than 1,000 pink salmon had reached the stream and fishing time was reduced to the regular two 48 hour weekly fishing periods and the markers were put back in effect at Desire Creek on July 24. The escapement increased rapidly after the reimplementation of the markers and reduced fishing time and the catch had reached 59,000 by August 6. It was obvious that a strong return was occurring to this usually sporadic producer and an aerial survey on August 7 indicated the escapement had reached 12,000 fish, well within the desired range of 10-20,000 fish (Table 2).

Fishing time in the East Nuka subdistrict was increased to seven days per week and the markers were removed at Desire Lake Creek on August 7. Strong catches continued for the next 10 days, but fishing effort gradually decreased until only two vessels remained on August 21. The escapement of 32,000 was considered slightly excessive for this small stream and was 60 percent above the upper end of the desired range (Table 2). The harvest of 97,800 pink salmon was the second highest even

year harvest in the Nuka Bay area (Appendix Table 11) and was the third highest on record for the Desire Lake Creek return. James Lagoon Creek, located in the same bay, received a good escapement of 6,600 fish, but did not produce a harvestable return (Table 2).

Even-year pink salmon returns to Port Dick Bay are primarily intertidal spawning stocks which usually arrive in late July and continue through August. Pink salmon began showing during an aerial survey on July 8 and by July 18 over 19,000 fish were schooled along beaches on the south side of Port Dick Bay. The South section of the Port Dick subdistrict was opened to fishing on July 21, but no fishing effort occurred for three reasons: (1) strong catches at several sockeye returns, (2) other openings that coincided with Port Dick and (3) bad weather. Even when a portion of the Port Dick North section northwest of Middle Creek was opened on July 22, no effort occurred.

Nine boats were finally able to reach Port Dick on July 24 and over 24,000 pink salmon were caught that period. By July 28, the escapement in Port Dick Creek had reached 6,500 fish with an additional 55,000 schooled inside closed water markers at the head of the bay. Pink salmon had also begun accumulating inside the Island Creek closed area, and although the chum salmon escapement at Island Creek had not been achieved, additional fishing area was necessary to slow the pink salmon buildup at Island Creek.

An opening of the entire North section on July 28 allowed fishermen to begin fishing close to both sides of the Island Creek closed area and during the next 10 days the accumulation in the closed area increased to only 12,000 fish.

Markers at the head of Port Dick Bay were moved closer to the creek on July 30 after an aerial survey indicated over 63,000 fish were schooled on the flats with an additional 10,000 fish in the creek. The desired escapement for Port Dick is 20,000 30,000 fish for the intertidal spawning area and the marker adjustment reduced the excessive buildup to 23,000 fish over the next six days.

Heavy rains, which caused severe flooding during the second week of August, slowed the accumulations of pink salmon in the closed water areas, but when this torrent of freshwater runoff subsided, the numbers of pink salmon increased quickly at Island Creek. The markers at Island Creek were moved into the island off the mouth of the creek on August 14, which opened a major schooling area east of the creek to fishing. An aerial survey on August 13 indicated over 36,000 fish schooled in this area and 35,000 were harvested during the next two days.

Fog and strong winds prevented additional surveys until August 19. Large catches occurred on August 18 from fish backing off the flats at the head of the bay. Only two boats were present on August 19 and 12,000 pink salmon were still present on the flats. An escapement of 25-30,000 fish was already in Port Dick creek and no fish were observed moving into the bay along

the outer beaches. Waters at Port Dick Bay west of the Middle Creek to Shelter Cove line were closed at 12:00 noon August 19 to protect the remaining fish during the series of minus, "backout" tides. The two boats were directed to Island Creek to take 12,000 pink salmon, which were in excess of escapement needs, from the closed water area.

The pink salmon escapement to Port Dick Creek and Island Creek were considered excellent (Table 2). Pink salmon escapements to other Outer district streams were quite variable. The total escapement of 11,500 fish to four streams in Port Chatham and 7,000 fish to South Nuka Creek were considered good, but escapements to Rocky River, the Windy Bay Creeks and other numerous, small streams in the Nuka Bay area were poor and continued the low, even-year production trend.

Chum Salmon

Chum salmon returns to the Outer district were poor and continued the recent trend which has been attributed to poor ocean survival conditions in 1982 and 1983. No specific openings were allowed to harvest chum salmon and the entire Outer district chum salmon harvest of 11,701 fish was taken incidentally during directed sockeye and pink salmon fisheries. The harvest came primarily from the Port Dick subdistrict and was 84 percent below average for the Outer district (Appendix Table 17). Escapements were extremely poor in all streams except in Island Creek where the 8,600 fish escapement was

considered fair (Table 3). The total chum salmon escapement for the Outer district was 60 percent below average.

Although no openings were allowed specifically for harvesting chum salmon, large portions of Port Dick Bay were kept closed to protect the Island Creek return. However, an opening of the entire North Section of the Port Dick subdistrict on July 28, resulted in the harvest of 7,000 chums when fish "backed out" from inside the closed waters area due to rains and heavy winds. This is something that must be constantly watched in the Port Dick area, especially when working with returns of low to medium run strength.

Coho Salmon

A significant coho salmon harvest occurred for the second consecutive year in the Outer district. The harvest of 5,052 coho salmon was a new record and was ten times the average for this district (Appendix Table 17). The harvest again occurred exclusively in the East Nuka subdistrict from returns to Delight and Desire Lakes. Before the pink salmon return to Desire Creek ended, it was obvious from the coho harvest that another strong coho return was occurring.

By August 23, the coho harvest had reached 2,700 fish and over 500 coho had already reached the freshwater lagoon in Delight Creek. Fishing time was extended until September 10 with fishing time allowed during the regular two 48 hour weekly periods and McCarty Lagoon kept closed to fishing. The harvest

increased to approximately 4,000 fish and a request was made for an extension of the fishery past September 10. An aerial survey on September 12 indicated the Desire Lake escapement had reached 650 fish and that over 1,800 coho salmon were schooled in the lagoon at Delight Creek. The subdistrict was reopened from September 12 through September 27 on a seven day per week basis with McCarty Lagoon open to fishing. Coho escapements to both lake systems probably totalled 4,000-5,000 fish at a minimum; however, no surveys were flown after September 12.

KAMISHAK DISTRICT

Salmon fisheries for various species in the Kamishak district in 1986 were nothing short of phenomenal. The harvest of 641,889 fish of all species was a new record and more than 2 1/2 times the previous record set in 1968 (Appendix Table 18). Sockeye and pink salmon harvests were primarily responsible for the record harvest, each setting new species records for the district. These large harvests are only the beginning of future trends in this district due to a variety of fishery enhancement projects that will increase production of various species over the next decade.

Sockeye Salmon

Sockeye salmon returns to the Kamishak district in 1986 surpassed all expectations, primarily due to an unexpectedly strong return to Chenik lake. The harvest of 146,496 set a new record for the area and was almost double the previous record set in 1985 and over 13 times the average harvest for this district (Table 1 and Appendix Table 18). Although excellent catches occurred on Kamishak River and Mikfik Lake returns, it was the harvest of over 111,000 sockeye from the Chenik Lake return that caused the new record harvest (Appendix Table 13).

The Kamishak district from the Bruin Bay subdistrict south was opened to seining on June 2 in anticipation of a strong return to Mikfik lake. This return was slightly behind recent years' run timing and no catches were made until June 10. Two boats

caught 2,300 fish on June 10-11, but bad weather prevented further fishing until June 14.

Commercial Fishery Division personnel were present at McNeil River during the fishery. Reports were relayed to the Homer office that fish had entered the lagoon and creek during the storm and an aerial survey on June 13 indicated 1,850 sockeye in McNeil Lagoon. Fishing time was immediately extended to seven days per week as it appeared that the return was gaining momentum. An aerial survey on June 15 indicated the accumulation in the lagoon had increased to over 6,200 fish and that some fish had already reached the lake, even though nine vessels had caught over 5,700 fish since the storm subsided. An additional survey on June 16 indicated that 4,000 sockeye had reached the lake or stream and that 4,800 fish were still present in the lagoon.

In an attempt to reduce the potential conflict between bears and fishermen and also reduce the buildup of sockeye in McNeil Lagoon, preventing excessive escapement to Mikfik Lake, a short flare opening was allowed just prior to high tide. A one hour and 45 minute opening was allowed on June 16 with the opening and closure being signalled by flare. The upper boundary of fishing was marked by a Department employee on the ground to protect additional fish which were still needed for escapement. Ten boats harvested 4,300 fish during the opening, which was hectic, and approximately 1,200 fish were left in the upper portion of the lagoon.

Fishing time was reduced back to the regular weekly periods on June 21, but the return continued strong throughout June and seven additional lagoon openings of 1 1/2 to 2 hours in duration were allowed between June 19 and July 1. The total harvest at Mikfik Creek was 27,500 sockeye and was the second highest on record for this small system. The escapement of 7,800 fish was considered excellent and no bear-fishermen problems arose during this fishery.

Several boats moved down to the Douglas Reef area during the latter portion of the Mikfik return and before the Chenik Lake fish arrived and caught 7,600 sockeye from returns to Douglas and Big Kamishak Rivers (Appendix Table 13). No escapement levels have been set for these systems since most of the fish spawn in side slough and beaver dam areas, but the 5,000 fish escapement to Kamishak River was considered good (Table 4).

Chenik Lake located just north of McNeil River has been the target of sporadic enhancement efforts since the late 1970's. These efforts did result in increased spawning escapements beginning in 1980 (Appendix Table 7) along with limited harvests from 1982-1985 (Appendix Table 13). The strength of the 1986 return was totally unexpected, but was a very welcome surprise.

Approximately 3,800 fish were first observed at the mouth of Chenik Creek on July 1 and by July 7, surveys indicated this had increased to 25,000-30,000 fish. Sockeye were attempting

to use the newly created fish ladder, but bear activity had prevented all but 300 from reaching the lake and stream. A one hour flare opening was announced for 4:00 - 5:00 p.m. July 8 with additional openings planned depending on weather and harvests.

Approximately nine vessels "co-opt" the opening. The small fish size, which resulted in extensive gilling of the fish in the seines, and timing of the high tide necessitated an extension of the fishery from 5:00 p.m. until 6:00 a.m. July 9. The evening fishery harvested 28,000 sockeye, but on-site estimates indicated that more than 40,000 fish were still schooled in the area. The fish appeared to scatter due to rough seas that evening and did not reappear at the mouth of Chenik during the early morning high tide. A survey was flown at noon and the area was reopened from 1:00 until 8:00 p.m. July 9 to harvest an additional 15,000 fish.

The escapement had increased to around 1,000 fish by July 9, but with the extremely strong run, the harvest of 62,000 fish had still not slowed the return adequately. Weather prevented surveys of the area on July 10, but communications with the fishermen indicated over 20,000 fish were still schooled in the Chenik area. Another opening was allowed from 12:00 noon until 8:00 p.m. on July 10 and the vessels, which were still "co-opting" the fishery were told to harvest an additional 15,000 sockeye. Weather hampered aerial estimates on July 11, but a survey on July 14 indicated approximately 27,000 sockeye had again accumulated at the mouth of Chenik Creek. A 30 minute

flare opening was announced for that evening since all boats had decided to end the "co-opt" arrangement.

The area was left closed for the remainder of the week to see if the fish would utilize the constructed fish pass during the medium tide series. However, over 18,000 sockeye had accumulated at the mouth by July 21 and even though the escapement of 4,000 fish was still slightly below the goal, another one hour flare opening was allowed on the afternoon high tide on July 21. Fish were moving upstream rapidly due to the apparent lack of bear activity and this opening resulted in a harvest of 16,000 sockeye. An estimate of 2,200 fish remained in the area after this opening.

The high tide series rapidly moved the remainder of the desired escapement into the lake and the area was reopened on a seven day per week basis on July 27. The 7,000 fish escapement was considered good and was similar to the parent escapement in 1982 (Table 4 and Appendix Table 7). The total harvest of 111,300 sockeye is the highest in the recent 30 year history and would come close to the record harvests back in the early 1930's. It was further estimated from aerial and on-site observations that a minimum of 5,000 fish died on the flats at low tide due to bear and gull activity harassing fish out of the holding pools in the fish ladder, thus stranding fish on the shallow intertidal flats.

Pink Salmon

The 1986 pink salmon return to the Kamishak district will end up one for the record books. Pink salmon returns throughout the district were nothing short of fantastic, and returns to Bruin Bay and Sunday Creek resulted in a new record harvest for the district. The pink salmon harvest of 423,774 fish broke the old record of 198,253 set in 1968 (Appendix Table 18). Bruin Bay produced the majority of the harvest, 349,700 fish, with most of the remainder, 71,100 fish, being taken in Rocky Cove and Ursus Cove (Appendix 11).

Pink salmon have historically arrived in Bruin Bay during the last 10-12 days of July, with just slightly later run timing for the Sunday Creek return in Rocky Cove. The first survey of Bruin Bay was not flown until July 14, but already indicated an extremely strong return was in progress. Over 25,000 pink salmon, half of the desired escapement goal, were already in the river, with another 6,000 fish schooled in the "pothole". Although the subdistrict was open to seining no fishing effort had occurred due to the strong sockeye return at Chenik Creek. Fishing time in the subdistrict was immediately extended to seven days per week and the "pothole" was opened to fishing on July 14.

Typical Kamishak and Bruin Bay weather prevented any harvest until July 18 and also resulted in the loss of one jitney and the swamping of two others. No serious fishing effort was put forth until after the July 21 opening at Chenik, by which time the escapement in Bruin Bay River had increased to an estimated

266,000 pink salmon. Schools of fish were observed everywhere and the entire outer beach area from just north of the Kirschner Lake waterfalls to Bruin Bay was solid fish. Aerial estimates of these fish were approximately 250,000. Additional fishermen moved to Bruin Bay after the July 27 Chenik opening and tender capacity became the major limiting factor, along with strong tides, in harvesting the return.

An aerial estimate of the pink salmon escapement on July 26 was 600,000 fish and only 53,000 fish had been caught by that date. During the next two weeks, 8-10 boats caught 263,000 pink salmon, but the escapement level in Bruin Bay River doubled to around 1.2 million fish. The final escapement was assumed to be 1.2 million fish, however, it was virtually impossible to accurately estimate the actual numbers since the river was full of fish from bank to bank. Escapement was far in excess of the desired range of 25,000-50,000 fish (Table 2). It is unfortunate that this large escapement occurred because past returns have indicated that escapements over 100,000 fish rarely, if ever, reproduce themselves in this particular system.

Sunday Creek located several miles north of Bruin Bay also had a very strong return. Fish began schooling off the mouth of the creek in Rocky Cove in mid-July and the first survey on July 14 indicated over 57,000 fish in the cove. The Rocky Cove subdistrict was opened to seining south of the mouth of Sunday Creek from July 14-15 and was extended until further notice on a seven day per week basis on July 15.

Aerial surveys through July 21 continuously indicated large numbers of fish schooled in Rocky Cove, but fishermen's catches remained low. Escapements progressed quickly from 2,700 fish on July 16 to 105,000 on July 30. Peak catches occurred from July 22-30 and it appeared that many Bruin Bay bound fish were stopping in Rocky Cove for short periods of time before moving south. It is impossible to estimate what portion of the Rocky Cove catch was actually Bruin Bay fish. A short weekend closure occurred from July 18-21 after a July 18 aerial survey indicated that the escapement was only 6,000 fish. Rains and flooding during this period of time appeared to slow the movement into Sunday Creek as it had in Bruin Bay. The final estimated escapement was a conservative 109,000 pink salmon (Table 2). Although almost 11 times the goal for this stream, the escapement was considered very good due to the unusual spawning distribution into the upper two miles of Sunday Creek. Recent spawning distribution has been observed primarily in the lower mile of the creek.

Brown's Peak Creek in Ursus Cove is the third main pink salmon spawning stream in the Kamishak district. Like its relative to the south, Brown's Peak also experienced a strong return and by June 21 over 6,600 pink salmon had reached the creek. The Ursus Cove subdistrict was opened to fishing on July 23 and the markers were removed at Brown's Peak Creek, allowing fishing up to the mouth of the creek. It is difficult to break down the contribution of each of Sunday Creek and Brown's Peak Creek to the total harvest in this statistical subdistrict. However,

based on fishing effort and total run strength of these two systems, it appears that the Sunday Creek return probably accounted for at least 60,000 fish of the 71,100 pink salmon harvest in these two subdistricts. The Brown's Peak Creek escapement of 28,000 pink salmon (Table 2) was almost three times the average, but was not considered excessive due to the spawning distribution of fish in the upper reaches of this stream.

Pink salmon harvests in the Kamishak district occurred primarily in the three, previously mentioned, subdistricts. However, excellent escapements to many minor streams may provide increased production throughout the district in the future. Five streams between Amakdedori Creek and North Head Creek, located near Iniskin Bay, had a total escapement of 26,700 pink salmon.

Chum Salmon

Chum salmon returns to the Kamishak district were expected to be good based on escapement levels in 1981 and 1982. However, as in 1985, these returns failed to materialize as expected. Several fair returns occurred in Ursus Cove, Cottonwood Bay and McNeil River, but the returns were comprised primarily of four year old fish and average weights of 7.8 to 8.0 pounds were indicative of the higher percentage of younger age fish. The Kamishak district harvest of 61,670 was 50 percent above average for the district (Appendix Table 18), but still considerably below the projected 100,000 - 140,000 fish

harvest.

McNeil River has been the earliest chum return in recent years and fish usually show up in late June and early July. However, fish did not begin arriving at McNeil until July 11 which was probably due to the preponderance of younger age chum salmon in the return. This difference in run timing between four, five and six year old fish has been observed since the late 1970's with five and six year old fish arriving first.

Chum salmon escapement progressed very well at McNeil due to many seiners being preoccupied with the Chenik Lake sockeye return. McNeil Lagoon contained 6,500 chum salmon on July 11 and this built to 15,000 by July 18. Over 12,000 chum salmon were caught at McNeil in a nine day period from July 12-20. Flooding caused by heavy rains prevented aerial estimates of the escapement and the subdistrict was closed to fishing on July 27. The chum salmon harvest of 13,700 (Appendix Table 12) was good, but not exceptional. The final escapement of 22,000 chum salmon (Table 3) was above the upper end of the escapement range of 10,000-20,000 fish, but was not considered ideal due to the lack of fish spawning in the extensive upriver spawning area above McNeil Falls.

The second chum return in the Kamishak district usually occurs in the Douglas River and Kamishak River systems, but in 1986, the Bruin Bay return took this distinction. Normally, the Bruin Bay River is a relatively minor chum salmon producer. However, due to the tremendously strong pink salmon return this

year, the chum salmon return appeared to have been harvested heavily. Approximately 5,400 chum salmon were caught in the directed pink salmon fishery, primarily during the last two weeks of July. The chum salmon escapement to Bruin Bay River was estimated at 2,000 fish (Table 3), but most of the fish were obscured by the tremendous schools of pink salmon and the figure is considered very conservative.

Seiners caught 11,700 chum salmon from returns to the Kamishak-Douglas subdistrict. The majority of these fish were caught along Douglas Beach, but were believed to be primarily Big and Little Kamishak River fish. With only 5,000 fish in each of these rivers on July 27 and the catch at only 1,000 fish, the subdistrict was closed on July 27. High, muddy water was affecting surveys of Big Kamishak as it had pink salmon streams further north, but escapements to Little Kamishak still indicated few fish arriving in the area. An August 1 survey indicated the 20,000 fish escapement goals for each of the Kamishak Rivers were almost assured and the subdistrict was reopened to fishing on August 1. Over 8,000 chums were taken during the 10 days from August 5-15. The final escapements of 24,000 and 17,000 for Big Kamishak River and Little Kamishak River, respectively, were considered fair to good (Table 3). Escapements to Douglas River streams were poor, but high glacial water prohibited aerial estimates in several streams.

Ursus Cove also experienced a strong chum salmon return, however, many fishermen felt that many of the fish harvested in

Ursus Cove consisted of fish headed for Cottonwood Bay. The Ursus Cove harvest of 22,100 chum salmon was a new record and was more than double the previous record harvest in 1971 (Appendix Table 12).

The Ursus Cove subdistrict was opened on July 23 to harvest pink salmon returns to the area and fishing time was extended after escapements were achieved. Chum salmon began appearing in the catch in late July, almost two weeks ahead of normal run timing. With low fishing effort, due to the Bruin Bay pink salmon harvest, the chum salmon escapement to Ursus Cove Lagoon streams occurred during the on-going fishery for pink salmon.

The lower end of the desired Ursus Lagoon escapement range of 5,000-10,000 chum salmon was achieved by August 6 and 3,900 fish had been caught. The strength of the run occurred from August 12 to 16 when 15,000 fish were harvested. During the latter days of this harvest, fish were observed moving out of Ursus Cove along the north shoreline and appeared headed north toward Cottonwood Bay. Waters of the Kamishak district north of Ursus Head, except for Cottonwood Bay, were opened to fishing on August 14 on the regular two 48 hour weekly fishing periods. The final escapement to Ursus Cove Lagoon streams reached 11,000 fish and was considered excellent (Table 3).

Chum salmon returns to other systems in the northern part of the Kamishak district began in mid August. Small numbers of chum salmon arrived in both Cottonwood Bay and Iniskin Bay in late July, but the first significant increase in observed fish

began on August 11 in both areas. This timing was normal for Cottonwood Bay, but around 10 days late for Iniskin Bay and the Iniskin return was considered to be weak. No fishing effort occurred in Iniskin Bay after the August 14 opening due to the lack of fish in the bay. The final chum salmon escapement to Iniskin River reached 5,900 fish. Although this number of fish was considered good for the limited spawning area, the escapement was below the desired level of 10,000 fish (Table 3).

A portion of the Cottonwood Bay subdistrict was opened to seining for six hours on August 15. Waters west of the longitude of Diamond Point were kept closed to protect additional chum salmon needed for natural escapement and for the Tutka hatchery brood-stock. Four vessels harvested 4,900 chums during the opening. The stream escapement increased to 3,500 fish by August 18 and 1,200 fish were seined up and transported to Tutka Bay for hatchery brood-stock on August 20 and 21. Weather had prevented aerial assessment of the return since August 18 and FRED division personnel relayed information that the stream escapement had reached the goal of 10,000 fish.

Cottonwood Bay was opened to seining for two periods of three hours and six hours on August 23 and opened on the regular weekly fishing period schedule on August 24. Only 2,700 fish were harvested on August 23 as fish had moved well inside the fishing markers by then and no harvest occurred after the August 24 opening. The final escapement of 11,000 fish (Table 3) was excellent for this small stream and the harvest of 8,800 fish was good.

Coho Salmon

The 1982 coho salmon harvest in the Kamishak district was a record and river systems in the southern portion of the district received excellent escapements. Many fishermen were anticipating an excellent return again in 1986 from that brood year production and the Kamishak-Douglas and McNeil River subdistricts were specifically left open seven days per week in anticipation of this return.

Coho salmon catches began during the second week of August with the total harvest reaching 5,300 fish from August 16 to 18. Peak catches during the 1982 fishery occurred from August 19 - 25, but this year's return dropped off rapidly after August 19. The decreased harvest was magnified by adverse weather that hindered fishing efforts. Fishing time was extended in the Kamishak district until September 10, but no additional harvest occurred. The total harvest of 9,935 coho salmon was the third highest on record and 3 1/2 times the average for the Kamishak district (Appendix Table 18), but was far below the anticipated harvest of 30,000-40,000 fish.

EASTERN DISTRICT

Sockeye Salmon

Sockeye salmon began arriving at Aialik Lagoon in the Eastern district along normal run timing in late June. An aerial survey on June 30 indicated over 850 fish were already schooled in Aialik lagoon, but the return appeared to stop completely for over two weeks. The Aialik subdistrict was opened to fishing on July 9, in conjunction with the East Nuka subdistrict, to assess the strength of the run. Fish ticket records indicate that one fisherman mistakenly thought that the lagoon had been opened and harvested 1,000 sockeye from the closed area. No citation was issued.

Movement of fish from the lagoon to the lake was very slow and only 125 fish had reached the lake by July 10. An aerial survey on July 14 indicated that over 5,500 fish had reached the lake and Aialik Lagoon was opened to fishing on the next high tide that evening. The total harvest of 3,055 sockeye salmon was similar to harvests in this area prior to 1983, but was far below the expected harvest levels and the recent three years' harvests (Table 1 and Appendix Table 13). The sockeye escapement of 7,600 fish to Aialik Lake was above the goal, but considered very good (Table 4).

Pink and Chum Salmon

The Eastern district, primarily Resurrection Bay, has always been predominantly an even-year pink salmon producer. A return of 171,000 fish was forecasted for 1986 based on recent returns to this subdistrict and alevin densities observed in the spring of 1985.

A different management strategy was used in 1986, somewhat as an experiment, in anticipation of the strong return to get a more uniform and steady harvest of fish. Although an aerial survey on July 14 indicated few fish present in the bay, two 12 hour openings were allowed on July 21 and July 24. Resurrection Bay north of Caines Head and including Humpy Cove was opened to fishing during these two periods, but an additional 500 yard radius closure was put in effect around the mouth of Tonsina Creek to protect chum salmon needed for spawning escapement.

Only two boats fished during the July 21 period and only 3,500 pink salmon were harvested. No effort occurred on the July 24 opening and when the same fishing periods were allowed during the following week on July 28 and 31, no effort occurred. The same fishing periods were allowed on August 4 and 7, but no special closure at Tonsina Creek was used as the chum salmon escapement had been achieved. Three to six boats fished during these two openings and harvested 35,200 pink and 3,200 chum salmon. The majority of the pink salmon harvest, 25,600 fish, was taken during the last opening. Escapements were far below

desired levels and with commercial harvests increasing through the last period, it appeared that the pink salmon run timing was delayed rather than the returns being weak.

An adjustment in Department policy for managing this fishery would have allowed for short, flare openings in specific, limited areas after the start of the Silver Salmon Derby if aerial surveys indicated large abundances of salmon to be in excess of escapement requirements. Weather prevented aerial surveys after August 13 and no surplus fish could be observed to justify any additional fishing time. Fish obviously were present as escapements in all streams increased in late August and early September.

Pink salmon escapements were eventually achieved in late August and September in all of the major pink salmon streams in Resurrection Bay (Table 2). Aialik Lake also had a good pink salmon escapement, but only 1,500 pink salmon were harvested in that area. The Tonsina Creek chum salmon escapement was estimated at 5,400 fish and was considered excellent. The pink salmon harvest for the Eastern district of 40,243 fish was 46 percent above average, but was considerably below the previous six year trend, especially the previous three even-year returns (Appendix Table 19). The chum salmon harvest of 3,757 came primarily from the Tonsina Creek area in Resurrection Bay and was 90 percent above average for the district (Appendix Table 19).

SUBSISTENCE AND PERSONAL USE FISHERIES

Kachemak Bay Personal Use

The Kachemak Bay personal use set gillnet fishery which targets on coho salmon was open from August 16 until September 13. The designation of this fishery was changed from subsistence to personal use this year due to adoption of the revised subsistence law. A total of 338 permits were issued, slightly above the previous year, but similar to the recent six years (Tables 9 and 10). The increase was primarily due to Homer area residents which comprised 82.8 percent of the permittees (Table 9).

The total harvest of 7,094 salmon was more than double the average and was due primarily to the pink salmon harvest of 3,132, which was more than four times the average for this fishery (Table 10). The coho salmon harvest of 3,831 fish was similar to the previous two years and was 52 percent above average. One aerial survey of Clearwater Slough indicated a fair escapement of 560 coho salmon.

English Bay - Port Graham Subsistence

The sockeye salmon return to the English Bay Lake system was extremely weak for the second consecutive year. Poor harvests occurred in both the subsistence and commercial set gillnets in early June (Tables 11 and 12). Similar to the 1985 management decisions, the commercial set gillnet fishery was closed on

June 14 and the subsistence fishery was extended until June 21. When no increase in observed escapement to English Bay Lakes occurred, the entire area was closed to subsistence and sport fishing on June 21. The sockeye harvests for both villages were 80 percent below the average from 1981 - 1984 (Tables 11 and 12).

Coho salmon catches for both villages in August and September were also below recent years (Tables 11 and 12). Catches for 1986 listed in these tables represent sport as well as set gillnet catches; whereas, years prior to 1986 represent only set gillnet catches. Pink salmon catches were average for Port Graham, but English Bay pink salmon harvests were double previous years, except for 1982.

ENHANCEMENT AND REHABILITATION

Tutka Hatchery

The Tutka Hatchery released a record 25.1 million pink salmon fry along with 18,000 chum salmon fry in 1986. A full short-term-rearing (STR) program was run, after formula adjustments in the Alaska Dry Pellet (ADP) made it more palatable to young pink salmon fry. Only 3.6 million pink salmon fry were directly released and 19.5 million were fed at Tutka with an additional 2.0 million transported to Halibut Cove Lagoon and fed for one month.

The 1986 pink salmon return of 441,323 fish was a new even-year record. The commercial harvest of 400,150 fish represented 72 percent of the Southern district pink salmon harvest and 28 percent of the entire Lower Cook Inlet pink salmon harvest. Ocean survivals were lower again this year for reared pink salmon fry due to an abbreviated feeding program.

The hatchery has begun shifting a portion of its production over to chum salmon. A total of 32 million pink salmon eggs and 1.3 million chum salmon eggs were taken in 1986. Cottonwood Creek in the northern part of the Kamishak district was used as the source for the chum salmon brood-stock. Approximately 1,000 adult chum salmon were seined up and transported on the R/V Pandalus to Tutka Lagoon where the fish were allowed to ripen before being spawned. This will continue for an additional four years with the intent of producing an

August return of chum salmon. Plans are presently for a shift of 10-15 million eggs in the hatchery to chum salmon production by the early 1990's.

Leisure Lake

Leisure Lake entered the third year of the fertilization phase, of the project, second year with liquid fertilizer. Two million sockeye fry were, for the first time, planted in the lake by use of an aerial cropduster plane. Smolt outmigrations totalled 372,000 fish and were comprised of 220,000 Age I and 152,000 Age II smolt. A 36-48 percent increase in average length of smolt from the previous year was observed with average weights being tripled for both age classes.

A large holdover of rearing fry occurred due to poor growth in past years and was evident by the large number of Age II smolt leaving the lake in 1986. While some holdover to Age II smolt might still be occurring, it is expected that this will be greatly reduced from recent years due to the average size and weight of the Age I smolt in 1986. Acoustic surveys of the lake in the fall of 1986 indicated the largest abundance of fish ever observed in the lake.

Adult sockeye returns were low compared with the excellent production during the previous three years. A total of 18,880 sockeye salmon returned to this project in 1986 with 18,530 entering the commercial seine and set gillnet harvests and the remaining 350 fish being taken by sport fishermen and personal

use dipnetters. This year's returns represented the lowest ocean survival rate of smolt observed from this project, but the majority of the return (62%) was from Age I smolt that averaged only 54 mm when they left the lake.

Chenik Lake

Chenik Lake has been the subject of a variety of enhancement projects beginning in the late 1970's. Fry and fingerling plants from 1978 to 1981 resulted in increased natural escapements beginning in 1980. The 1986 return of 123,000 sockeye were produced from the 1981 and 1982 natural escapements to Chenik Lake which were originally the result of enhancement efforts. Slightly over 111,000 fish were harvested in the commercial seine fishery.

CIAA worked on dynamiting a fish ladder into the cobble rock outcropping at the mouth of Chenik Creek to permit returning sockeye salmon easier access to the lake system. Fish were able to reach the lake easier than recent years, but additional adjustments are still needed.

Chenik lake was stocked with 839,000 fry in 1986 and pre-fertilization work was completed. The lake will be fertilized beginning in 1987, if the project is approved. Returning adult sockeye in 1986 averaged only 3.4-3.6 pounds and were 1.0-1.5 pounds below Leisure Lake fish which are from the same Tustamena Lake brood-stock.

Paint River Lakes

Aerial stocking of the lower two lakes in the Paint River system was allowed in 1986 even though the fish ladder-steep pass project has not been funded. Lower Paint Lake, 136 acres, was stocked with 320,000 sockeye fry and Upper Paint Lake, 250 acres, was stocked with 500,000 fry. Food production in these lakes is very similar to both Chenik and Leisure Lakes. Therefore, fry stocking levels were kept to approximate the original stocking level for Leisure Lake.

Halibut Cove Lagoon and Homer Spit

A secondary release site for Tutka Hatchery pink salmon fry has been a project under consideration for several years as a way to increase the overall survival of and production from Tutka fry releases. The Lower Cook Inlet Seiners Association in conjunction with the CIAA funded the transport to Halibut Cove Lagoon and feeding of two million pink salmon fry in 1986. Similar growth to fry reared at Tutka Lagoon occurred and the project is expected to produce 75,000 adult pink salmon in 1987.

The HCL king salmon smolt release continued with a release of 101,000 smolt. This has been reduced in recent years to provide king salmon smolt for the Homer Spit smolt release, where 104,000 smolt were released in 1986. The Halibut Cove Lagoon project produced a return of 750 king salmon of which 350 were taken by commercial set gillnets in the Halibut Cove area.

Returns to the Homer Spit were primarily young, one ocean fish, but provided an excellent recreational fishery. The total return was estimated at 1,300 fish. Based on average weights of king salmon taken in set gillnets in the remainder of Kachemak Bay, it appears that significant numbers of fish are being caught by these nets and could eventually become a target of recreational concerns.

Lake Studies

Pre-stocking studies were begun on five lakes with the intent to have them stocked with sockeye salmon fry in the spring of 1986. Baseline data will fulfill limnological and biological requirements and determine the initial stocking densities for sockeye fry. The lakes and their acreages are as follows:

Kachemak Bay

Hazel Lake	-	250 acres
Grewingk Lake	-	450 acres

Kamishak Bay

Kirschner Lake	-	340 acres
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Outer District

Port Dick Lake	-	210 acres
Petrof Lake	-	1,000 acres

Caribou and Seldovia Lakes

Caribou and Seldovia lakes were again stocked with coho salmon fingerling to provide additional fish to existing personal use, recreational and commercial set gillnet fisheries. Stocking

COMMERCIAL HERRING FISHERY

INTRODUCTION

The Lower Cook Inlet area (Figure 1) excluding the Southern district, was opened to commercial purse seining for sac roe Pacific herring for the second consecutive year. The same management strategy used in 1985 was incorporated again in 1986. The Outer, Eastern and Kamishak districts were separated into seven areas and all opened to fishing on April 20 (Figures 7 - 9). A guideline harvest level range of 150-200 short tons was set for each area and was adjusted in season by aerial assessments of the observed biomass.

The fishery was extremely productive, especially in the Kamishak district. A harvest of 2,154 short tons represented a 58 percent increase over the previous year's catch (Table 12 and Figure 10). Based on an average ex-vessel price of \$1,000 for 10 percent roe herring, the ex-vessel value of the harvest was estimated at \$2.2 million. Roe percentages ranged between 8.2 and 12.6 percent for all districts, and averaged 10.43, 9.61 and 9.61 percent for the Kamishak Bay, Outer and Eastern districts, respectively. Although 74 LCI permit holders were present during the fishery, only 58 permits made deliveries during the season.

Outer and Eastern Districts

Harvests were scattered throughout the Outer and Eastern districts in areas 1-3 from Port Dick to Day Harbor (Figures 7 and 8). Total harvest for these two districts was 195 short tons with an average roe recovery of 9.6 percent. Resurrection Bay produced two thirds of the total harvest (130 short tons) and was the only area where spawning was observed. Aerial surveys of these districts were severely curtailed due to budgetary restrictions and only four surveys were flown during the entire season. Seven vessels made deliveries from these areas and age class composition of the catch was similar to the 1985 harvest with 85 percent of the fish in the 2 - 4 year old age classes (Figure 12).

Extensive spawning was observed in Resurrection Bay during a May 7 aerial survey and was the only spawning observed in the Outer and Eastern districts. An estimated biomass of over 10,000 tons of fish was observed during an abbreviated survey on May 21. Species composition could not be determined. However, most of the fish were small and were believed to be sandlance (candle fish) and juvenile herring, possibly originating from the Prince William Sound area. This large biomass and other extremely large schools of fish remained in the area throughout the summer until late July.

area near Fortification Bluff. No Fish and Wildlife Protection personnel were present and none of the spotter pilots that saw the vessel make the set would file a statement. The set was released due to weather (45-50 mph wind) as the vessel was being washed onto the reef.

Small sets were made in Cottonwood Bay on April 26 and 27 (23 tons) raising the total harvest in Area 7 to 63 short tons. The total catch for Area 6 up to that time was at 1,007 short tons. Schools of fish began showing up just south of the South Head closure line on the morning of April 28. Many sets were made several hundred yards below the closure line and with no State vessel or enforcement personnel available, it was impossible to control the situation. A closure of Area 7 at 12:00 noon was announced at 10:30 a.m. and a skiff was sent out to mark the line. Two sets were released after this line was established and the harvest of 310 short tons brought the Area 7 harvest to 373 short tons and the total for the Kamishak district to 1,380 short tons.

The entire Kamishak district was closed to fishing at 9:00 p.m. April 28. This was prompted by: (1) the lack of sufficient aerial biomass estimates to justify further harvest and (2) a second warning of a potential major eruption of Augustine volcano. Heavy concentrations of volcanic ash in the air prevented continued aerial surveys to estimate biomass abundance. Fishermen were put on 24 hour notice for any further openings in the Kamishak district at 2:00 p.m. on April

Kamishak Bay District

The 1986 Kamishak district herring sac roe harvest of 1,959 short tons was an average harvest, but represented a 73 percent increase from the previous year (Table 13). Fish arrived on the fishing grounds with mature roe and roe recoveries were generally above 10 percent.

The first harvest occurred on April 22 in Cottonwood Bay (Area 7) of the Kamishak district (Figure 9). Harvests were relatively small through April 25 with a total harvest of 40 short tons taken in four days. A warning was received from Homer that a potential major eruption of Augustine volcano was imminent. Several fishing boats and tenders left the area on the evening of April 25. Fish showed up that night and 689 short tons were taken in Ursus Cove, five miles south of Cottonwood Bay, on the morning of April 26 in less than 1 1/2 hours. Fish were also showing south of Ursus Cove at Rocky Cove and Fortification Bluff. Area 6 between Ursus Head and the Kirschner Lake waterfalls and Area 7 south of the latitude of South Head were closed at 10:00 a.m. and most of the fleet headed back to Cottonwood Bay. About 58 tons of the 689 ton total harvest were taken near Rocky Cove.

About 18 vessels stayed further south near Bruin Bay and fish began showing near Contact Point on the afternoon of the 26th. The remainder of Area 6 was closed at 6:00 p.m. that evening after an additional harvest of 318 short tons. One incident occurred at 5:30 p.m. with a vessel making a set in the closed

28 and the entire fleet left the area.

Aerial surveys conducted on May 1 estimated the biomass in the Kamishak district to be approximately 17,000 tons and fishermen were put on a one hour notice for an opening at 3:00 p.m. on May 2. Plans were to harvest 200-300 tons in each of Iniskin Bay and Ursus Cove. Sample sets in Ursus Cove indicated a high percentage of spawned out fish. This information combined with strong gale force winds precluded any harvest in Ursus Cove. However, Iniskin Bay was opened for two hours from 5:00 - 7:00 p.m. May 2. The fleet harvested 356 short tons of herring during this opening. Weather made aerial spotting difficult and hazardous and also broke up the herring schools. Had the fleet not been on a 24 hour notice, an additional harvest of 300 tons probably could have been taken in Ursus Cove on the morning of May 2 as unspawned fish were present at that time. Adverse weather prevented locating the fish with just one test boat.

Fishermen were put back on a 24 hour notice on May 2 and this was reduced to 6 hours on May 16 in anticipation of the younger age class fish entering the area. A processor spotted 1200 tons of herring near the McNeil and Kamishak Rivers on May 17. A Department survey on May 18 indicated over 4,400 ton of new fish (60-70 percent three year old) were available throughout the district. Samples were taken, but before the first of four openings could take place, winds picked up to 50 mph and scattered the herring schools. Original plans were

again to take 200 - 300 ton from each of Area 5 and 6 as long as a fair percentage of older age fish were still present. Four openings occurred as follows with approximate harvest levels.

<u>Date</u>	<u>Fishing period (time)</u>	<u>Duration (hours)</u>	<u>Catch (short tons)</u>
5/19	= 7:30 a.m. - 9:30 a.m.	2 hours	80
5/19	= 7:00 p.m. - 10:00 p.m.	3 hours	30
5/21	= 11:30 a.m. - 2:30 p.m.	3 hours	20
5/21	= 8:00 p.m. - 10:30 p.m.	2.5 hours	75

By May 21, over 85% of the harvest consisted of three year old fish and no opening was allowed in Area 6. The large schools observed during the May 18 survey were never observed again.

Discussion

The weighted age class composition of the Kamishak district harvest indicated that 89 percent of the total harvest consisted of age 5 or older herring (Table 13 and Figure 11). Over 74 percent of the Area 5 harvest of 224 tons consisted of age 3 and 4 herring, but the area 5 harvest represented only 15 percent of the entire district harvest. The primary ages of 6 and 8 year old fish in 1985 shifted to ages 7 and 9 in 1986 (Figure 13).

This was the third consecutive year where excellent spawning was observed in the Kamishak district. About 53 linear miles of spawn were observed with 23 miles receiving repetitive spawning

over a 2 1/2 week period. Observed biomass estimates, which include the harvest, totalled 19,900 tons for a harvest rate of 9.8 percent (Table 14). Based on the extensive spawning observed during major surveys, the total biomass was expanded to what is considered a conservative estimate of 26,000 tons, which would lower the harvest rate to 7.5 percent.

Spawning ground deposition studies conducted in P.W.S. in conjunction with aerial biomass estimates and spawning observations have indicated that from 300 tons to well over 1,000 tons of herring have spawned per linear mile of coastline. Density of spawn was correlated to aerial observations of light, medium or heavy spawn and whether spawning was observed only once in an area or over a several day period. These estimates have been used to modify in-season aerial biomass estimates on which future harvests have been based.

Applying the P.W.S. data to the Kamishak district produced expanded biomass estimates of 30-35,000 tons. An in-season estimate of 25-27,000 tons was considered to be conservative and if a 500 ton per linear mile spawning density is used, the expanded biomass estimate for the Kamishak district would be 26,500 tons. Therefore, it appears that the expanded biomass estimate of 26,000 short tons used (Tables 13 and 14) is reasonable and on the conservative side.

On June 16 during a salmon survey, over 400 individual schools of herring estimated at 9,000 - 12,000 ton were observed from

Contact Point south to McNeil River in the Kamishak Bay district. A very small sample of these fish taken by snagging from an estimated 150 ton school of fish were age 2 herring. These fish were not contained in the biomass estimates, but are a good indication of recruitment in the coming years. Herring food and bait trawlers also located a large school of herring in the Shelikof Strait area south of the Kamishak district in the fall of 1985. Samples were taken from their catches and the Kodiak staff conducted sonar surveys of the fish. Samples taken during the Kamishak sac roe fishery were subsequently compared with the Shelikof samples using a scale analysis program. A very high correlation between the two samples was found indicating the possibility that the large school of herring located in Shelikof Strait may be fish that spawn in the Kamishak district. The indicators which point to this are: (1) the Shelikof Strait fish were comprised of a high percentage of juvenile, age 1 and 2 herring; (2) the age composition of the mature spawning herring in Shelikof Strait were very similar to the Kamishak district sac roe samples taken in 1985 and 1986 and completely dissimilar to local Kodiak stocks; and (3) the biomass estimate of the mature herring in the Shelikof Strait school is in the same relative range as the observed herring biomass during the 1986 Kamishak district sac roe fishery.

Summary

It appears that the Kamishak district herring stock is

rebuilding and is definitely healthy. Three consecutive years of extensive spawning has occurred which should provide for significant recruitment beginning in 1987. Based on the Shelikof Strait samples and the June aerial survey, it appears that there is a large biomass of juvenile herring present indicating success of at least two of the three spawning years. The spawning biomass of this year's age 4 herring appeared weak, but the age 3 herring biomass observed and harvested in Area 5 appeared to be good.

The present Kamishak district Pacific herring population is comprised of an extremely high percentage of older age fish which will soon drop out of the population. Plans for the 1987 fishery are to allow harvest of up to 10 percent of the younger age fish (age 1-5) and up to 20 percent harvest of age 6 and older fish. This would provide a harvest range of 3,300 - 4,300 tons based on the 1986 biomass estimates (Table 13). The actual harvest would be directed towards the upper or lower end of the proposed range based on in-season biomass estimates and level of recruitment of 3 and 4 year old fish.

Based on the extent of the proposed 1987 harvest, an adequate enforcement presence is paramount. A large vessel, such as the Vigilant, Enforcer or Trooper, is needed along with a runabout skiff and aircraft.

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TOTAL LOWER COOK INLET SALMON CATCH

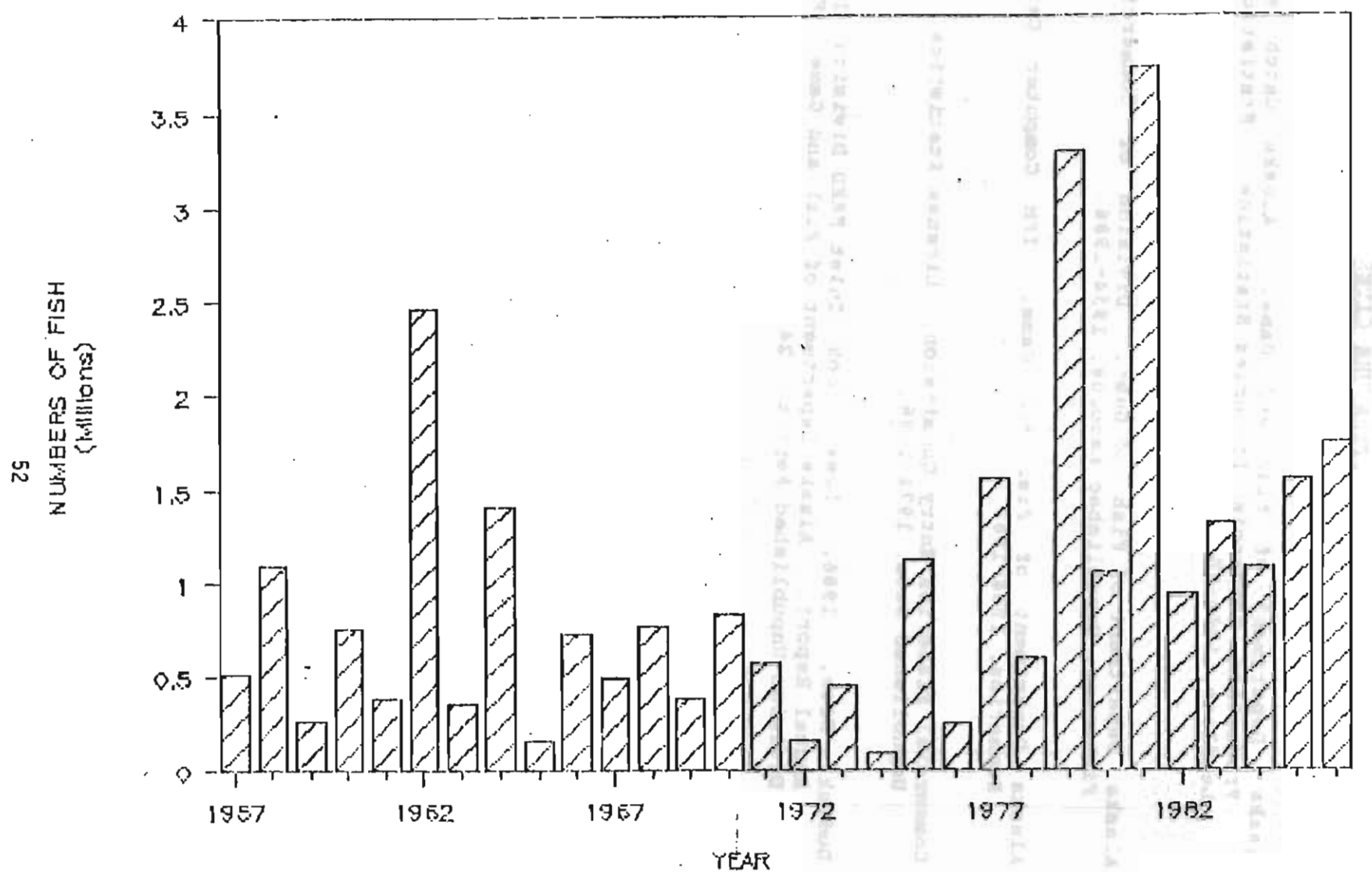


Figure 2. Lower Cook Inlet total salmon catch, 1957 - 1986.

LOWER COOK INLET SOCKEYE SALMON

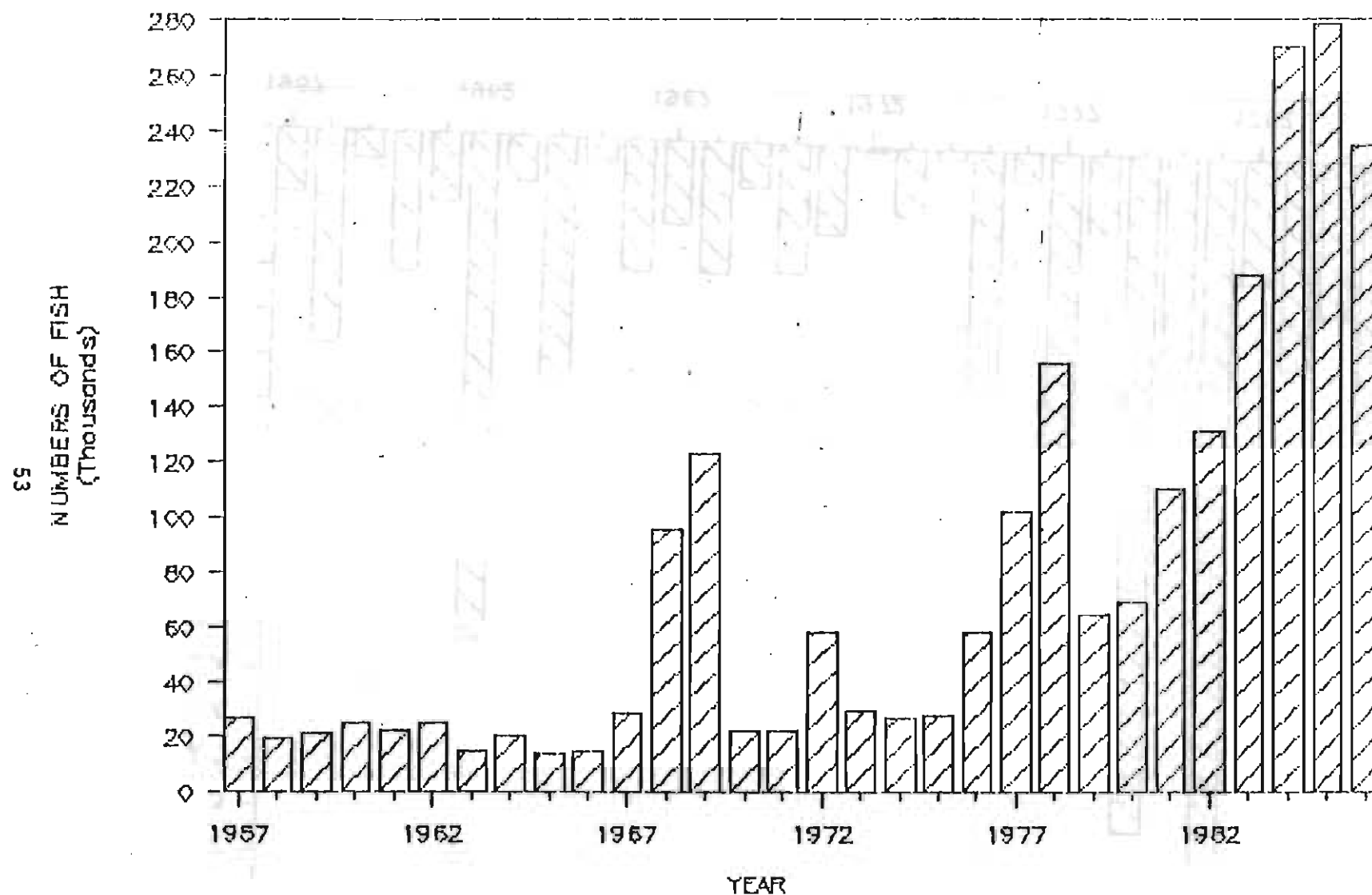


Figure 3. Lower Cook Inlet sockeye salmon catch, 1957 - 1986.

LOWER COOK INLET PINK SALMON

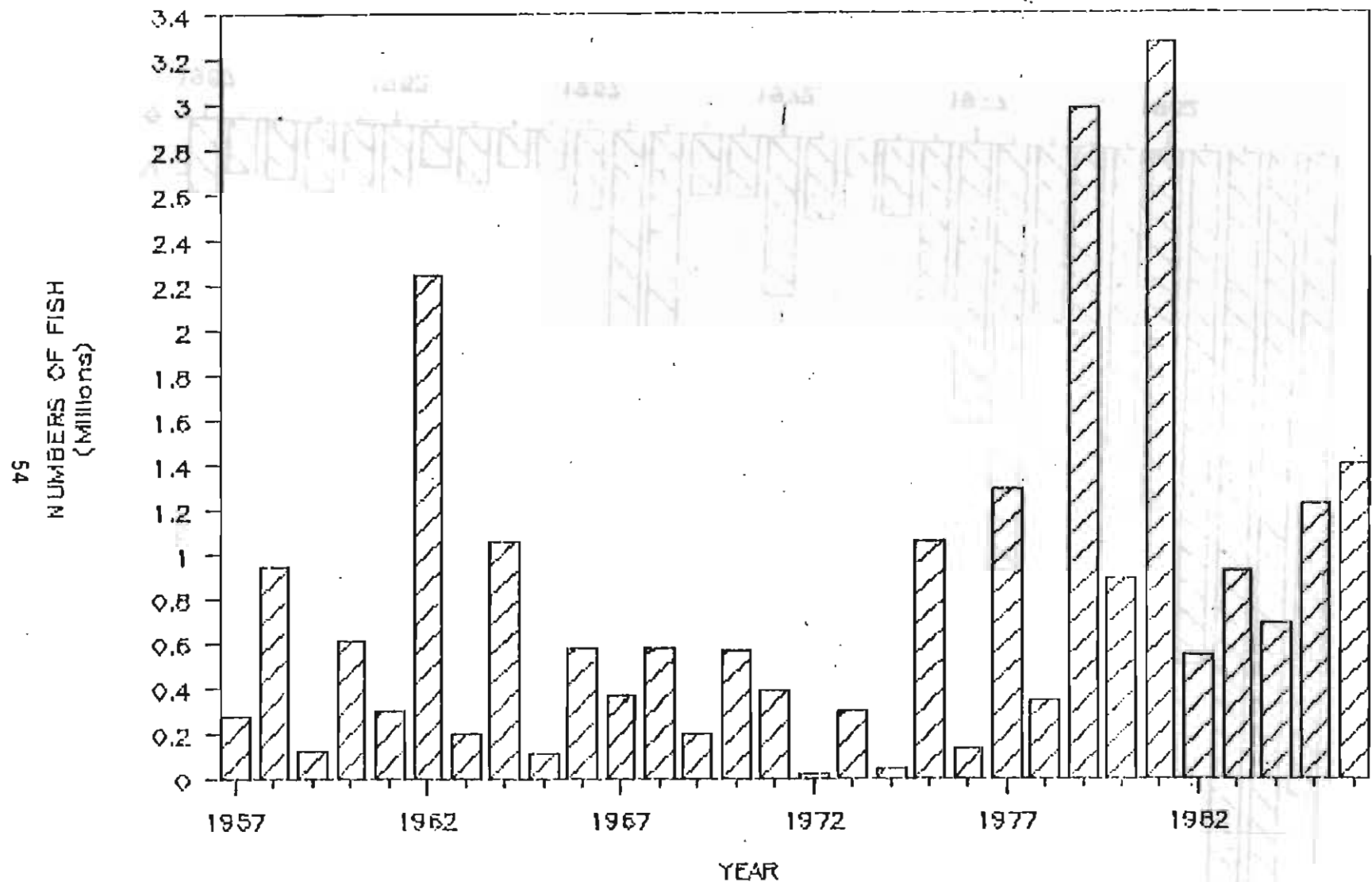


Figure 4. Lower Cook Inlet pink salmon catch, 1957 - 1986.

LOWER COOK INLET CHUM SALMON

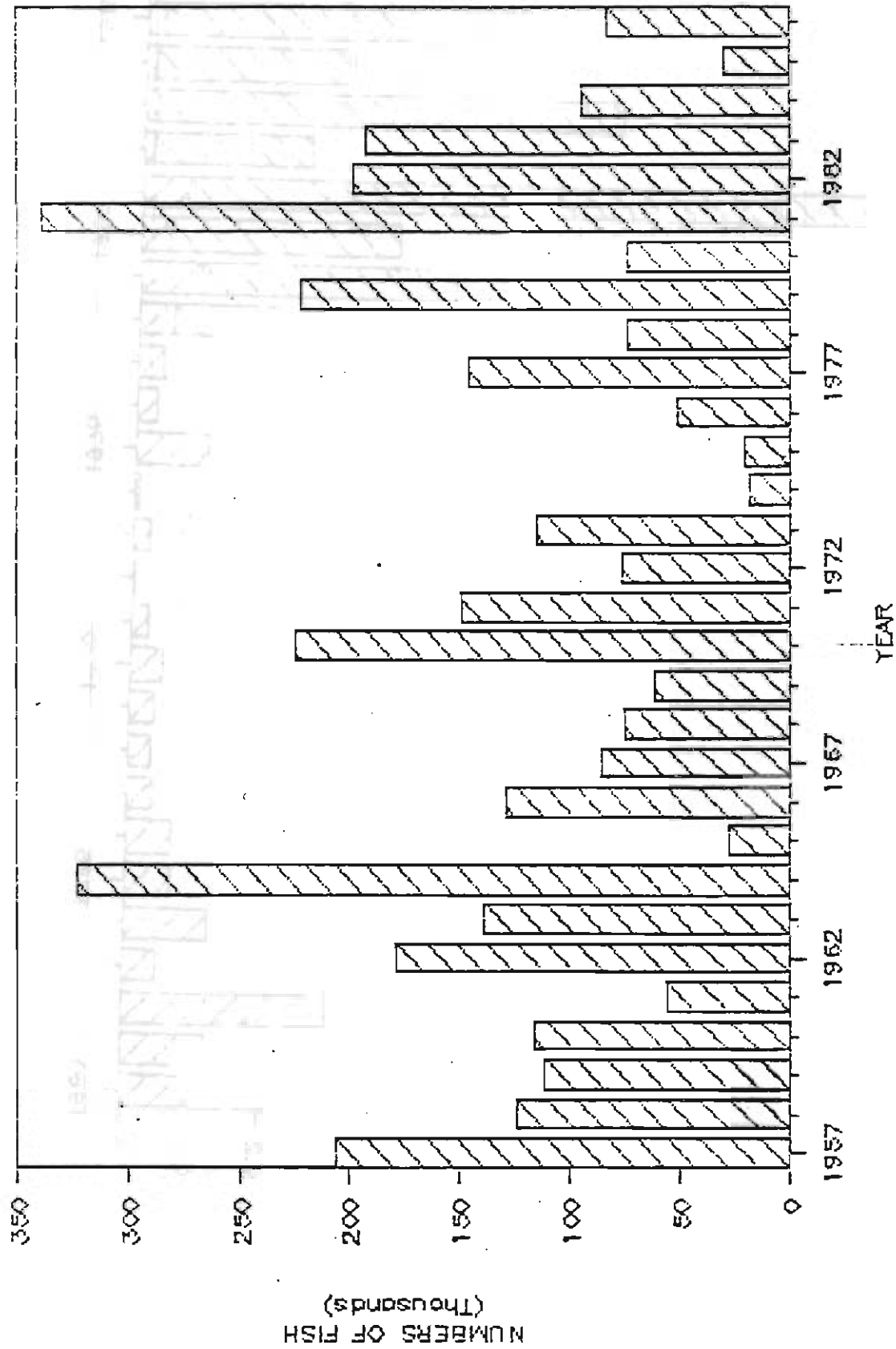


Figure 5. Lower Cook Inlet chum salmon catch, 1957 - 1986.

TUTKA HATCHERY PINK SALMON CONTRIBUTION

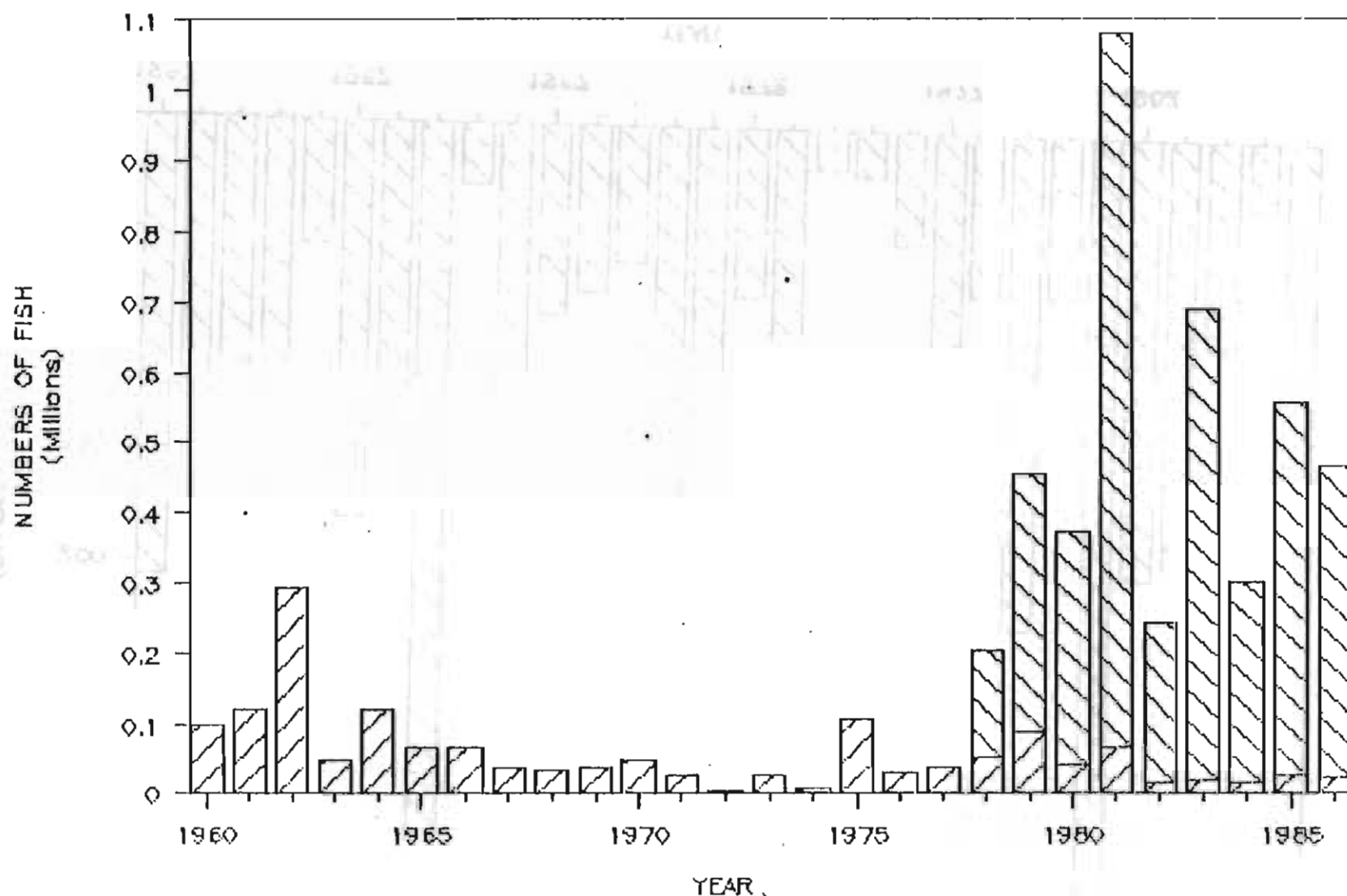


Figure 6. Tutka Creek wild pink salmon returns with recent years' hatchery contribution.

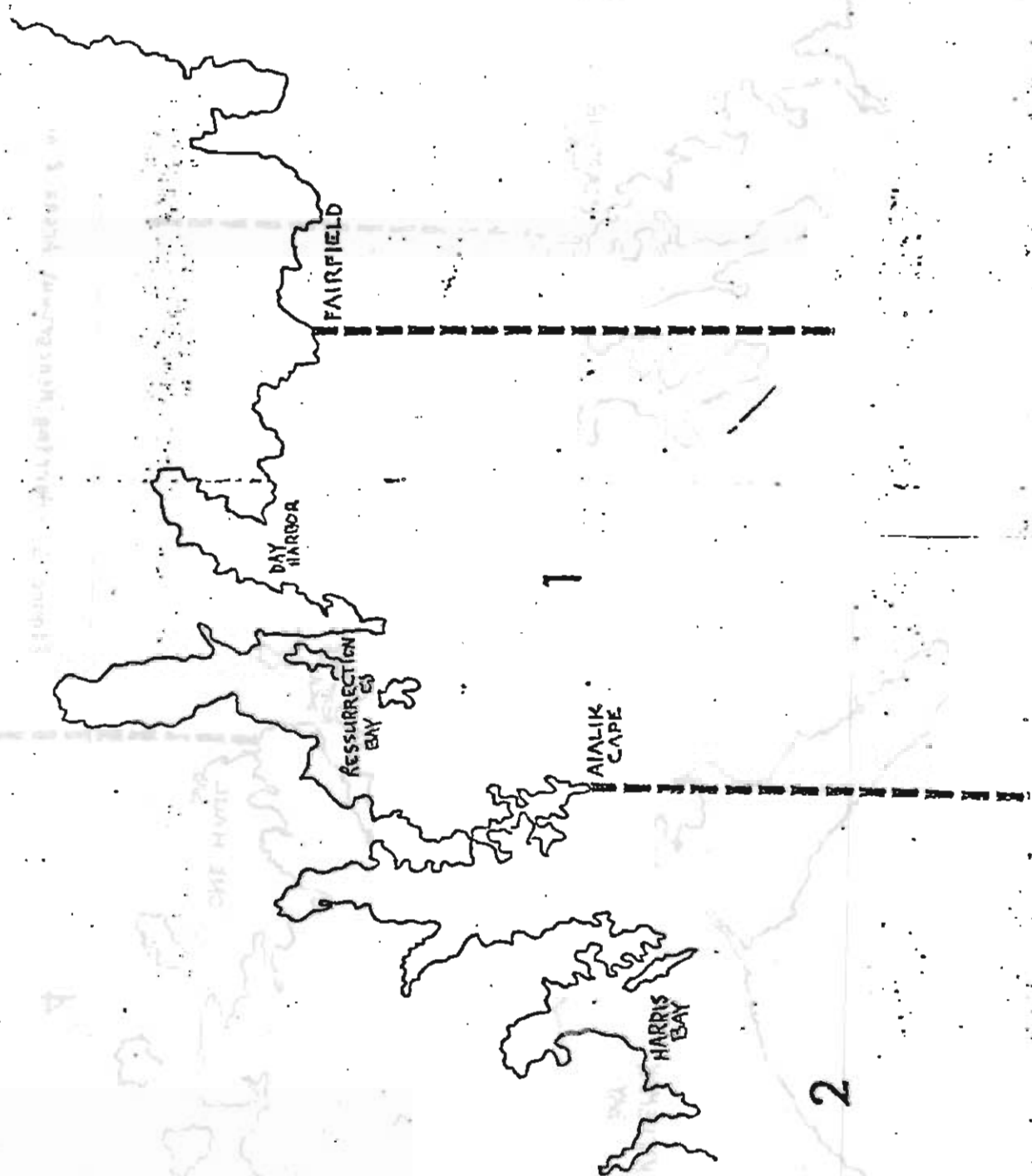


Figure 7. Herring Management Areas 1 and 2.

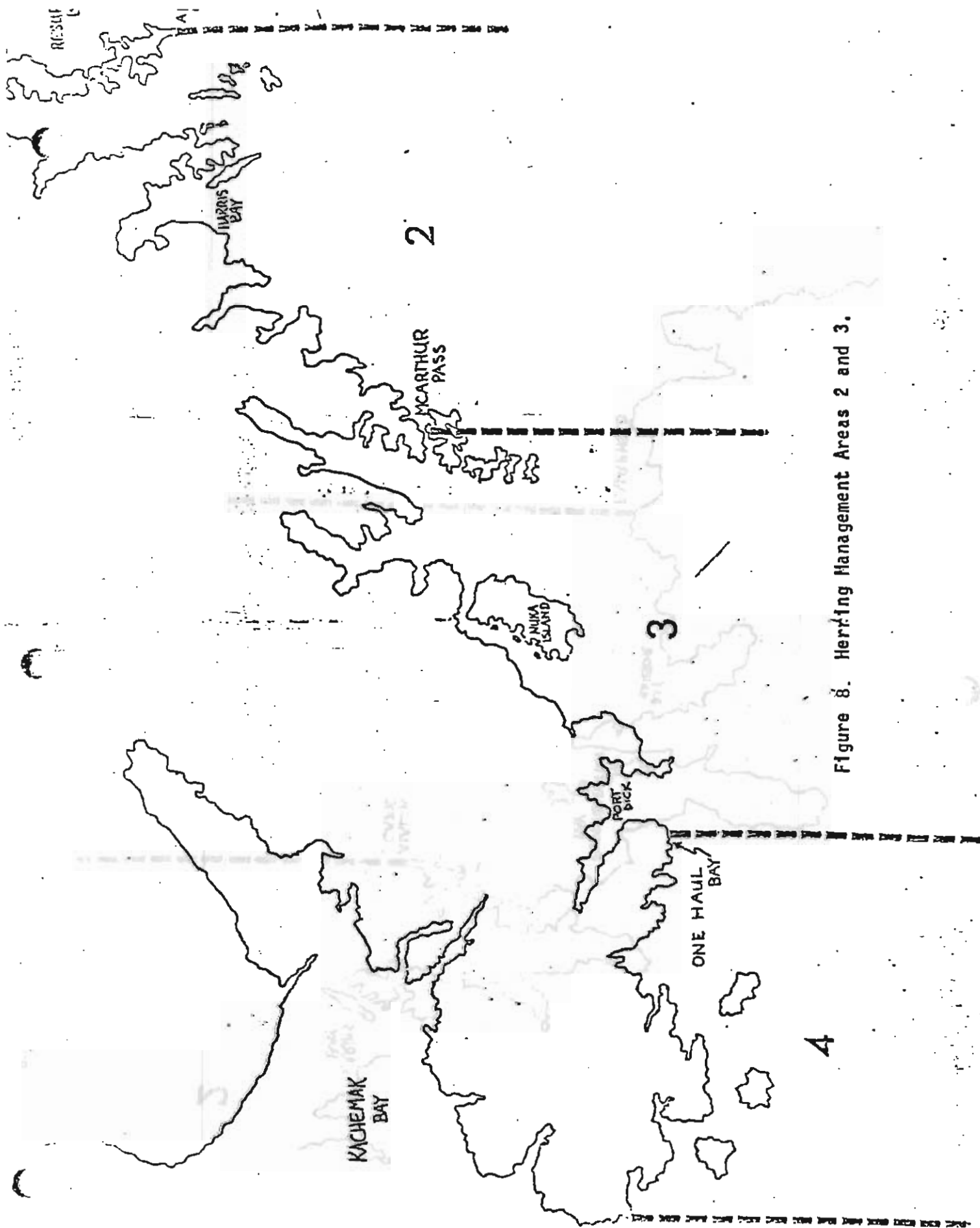


Figure 8. Herring Management Areas 2 and 3.

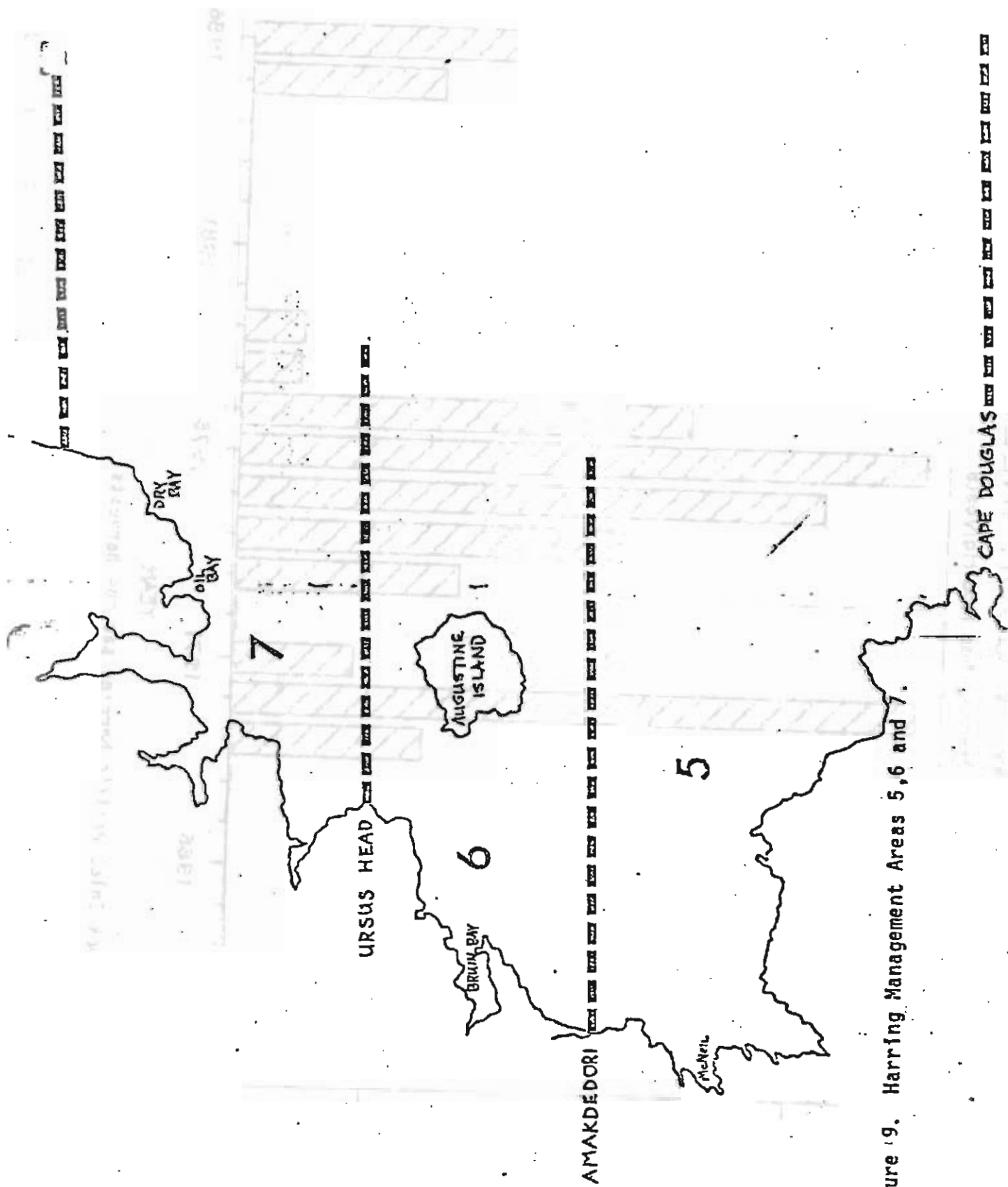


Figure 9. Herring Management Areas 5, 6 and 7.

LOWER COOK INLET

Herring Sac Roe Harvests

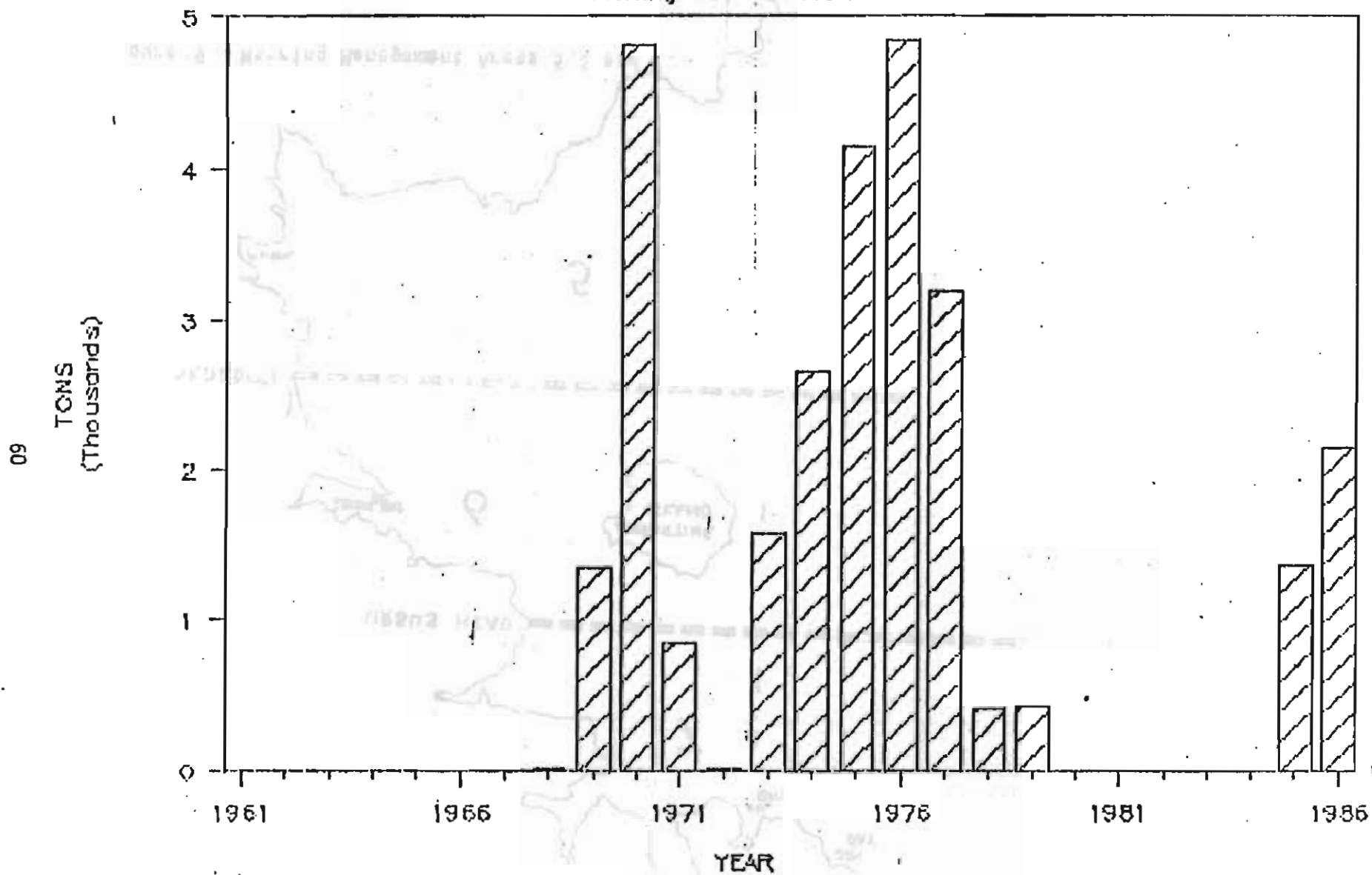


Figure 10. Lower Cook Inlet Pacific herring sac roe harvests.

1986 KAMISHAK DISTRICT

Weighted Herring Age Class Composition

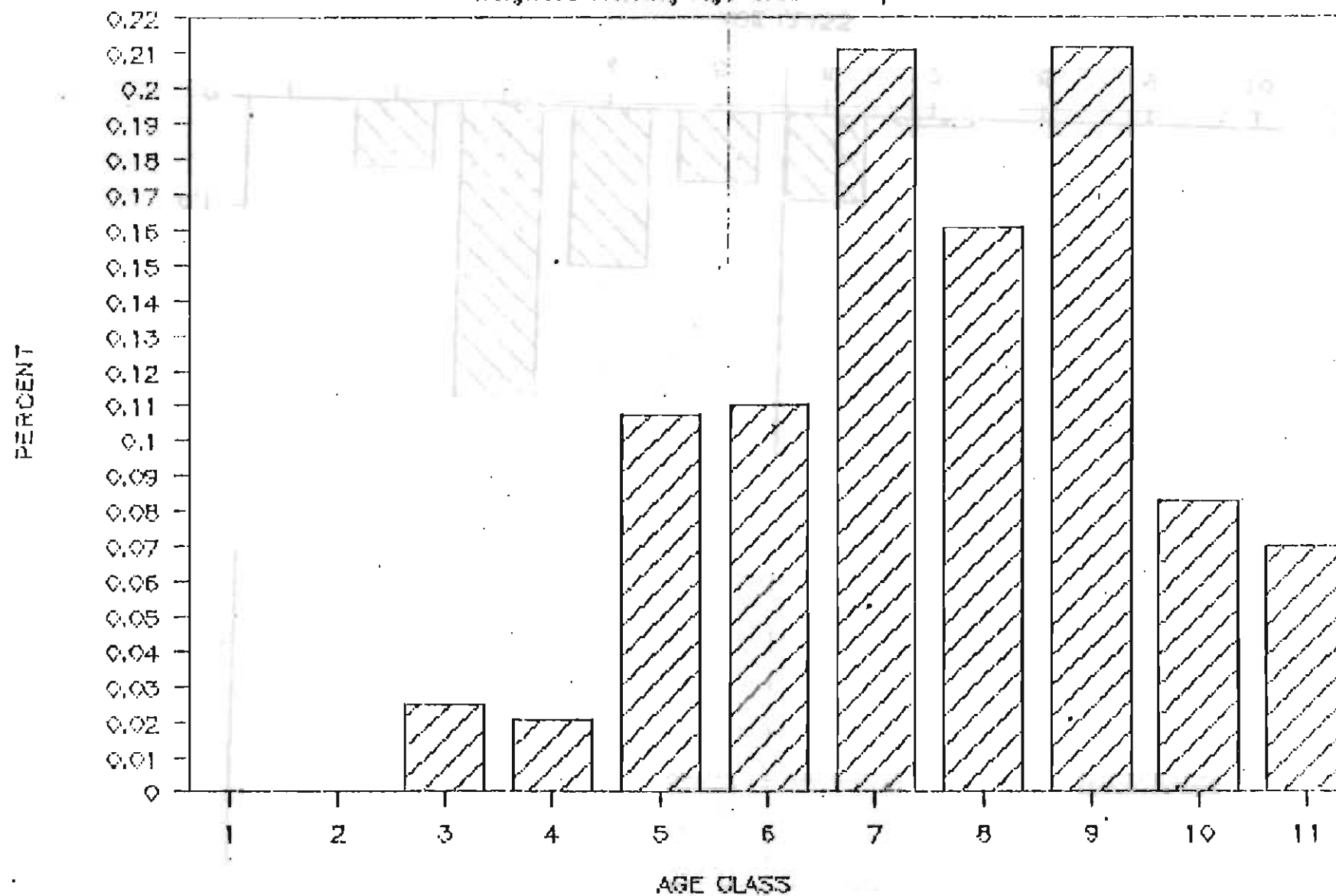


Figure 11. Weighted age class composition of the Kamishak district Pacific herring sac roe harvest, 1986.

OUTER—EASTERN DISTRICT

Herring Age Class Composition

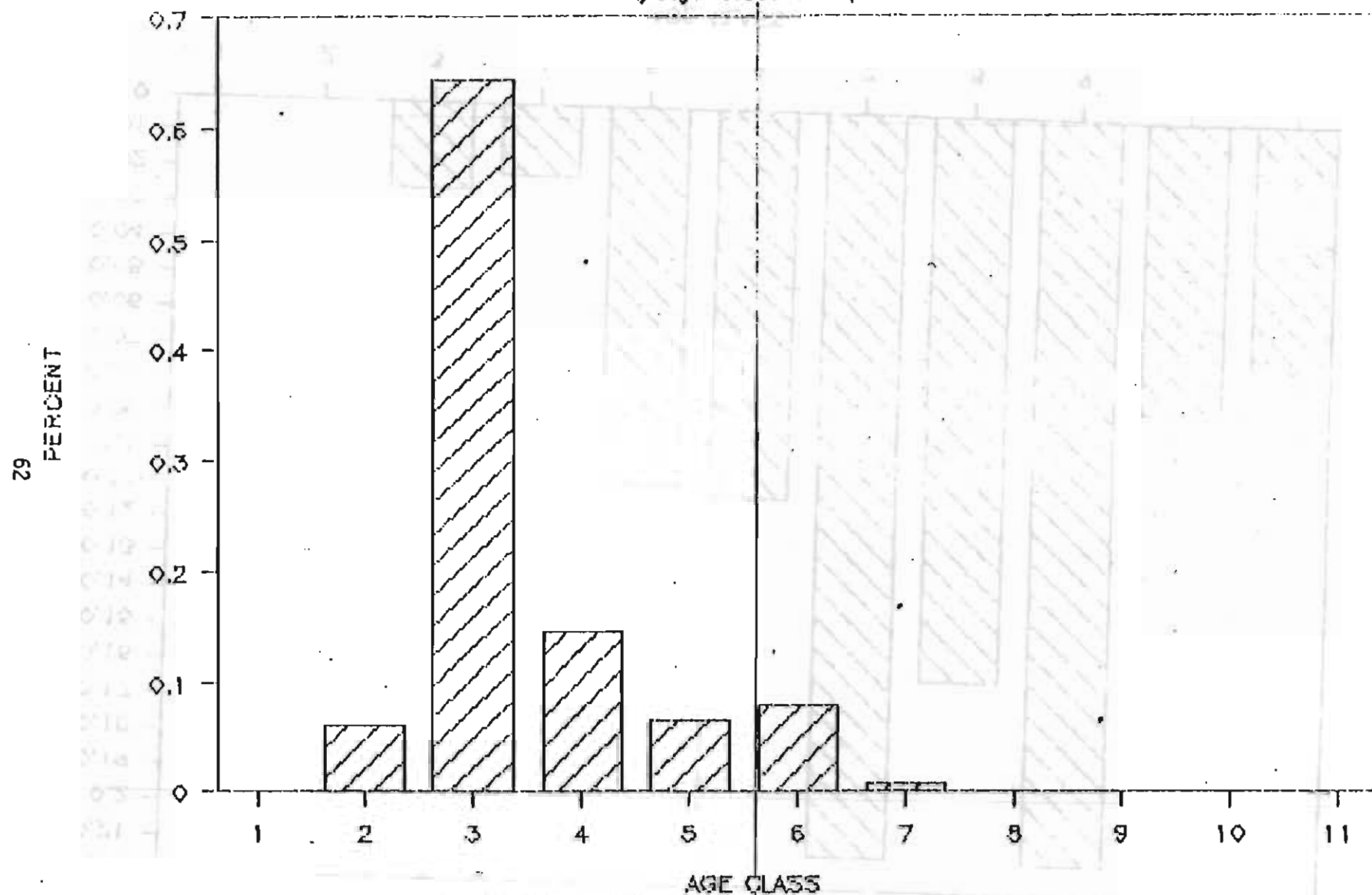
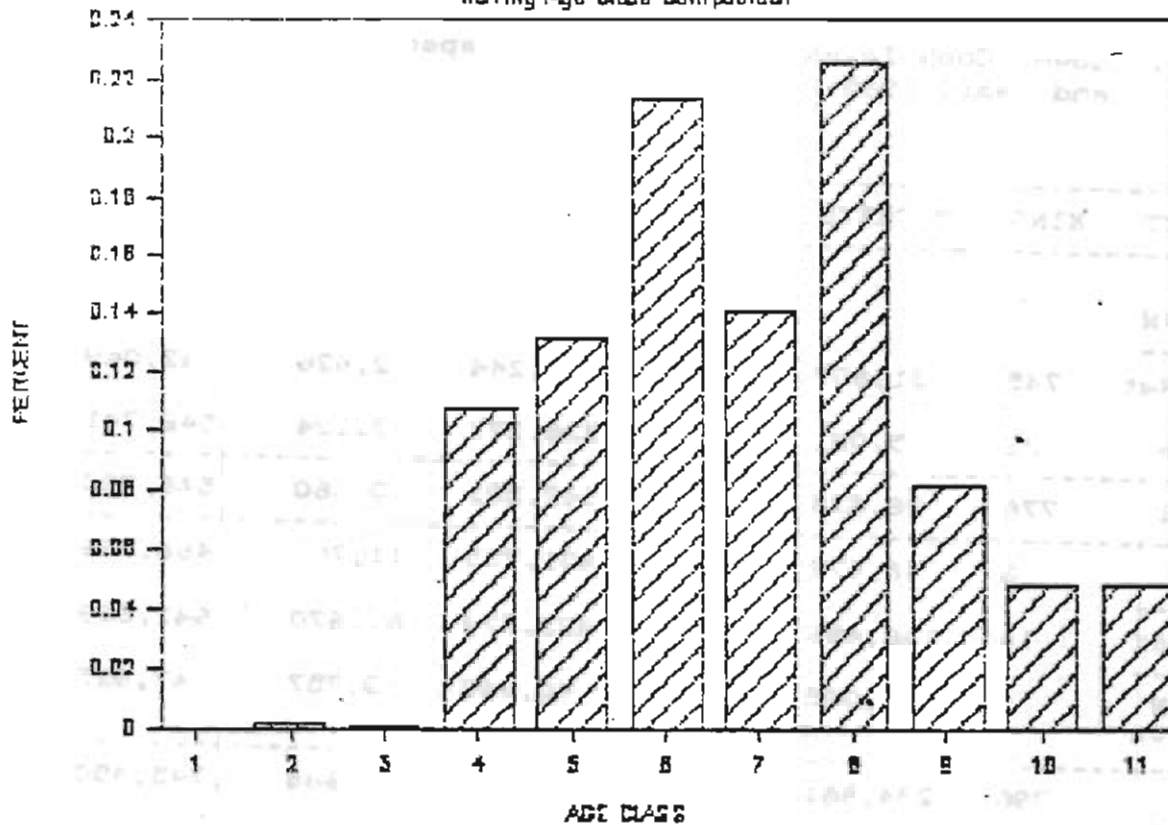


Figure 12. Age class composition of the Outer and Eastern districts' Pacific herring sacroe harvest, 1986.

KAMISHAK DISTRICT 1985

Herring Age Class Composition



KAMISHAK DISTRICT 1986

Herring Age Class Composition

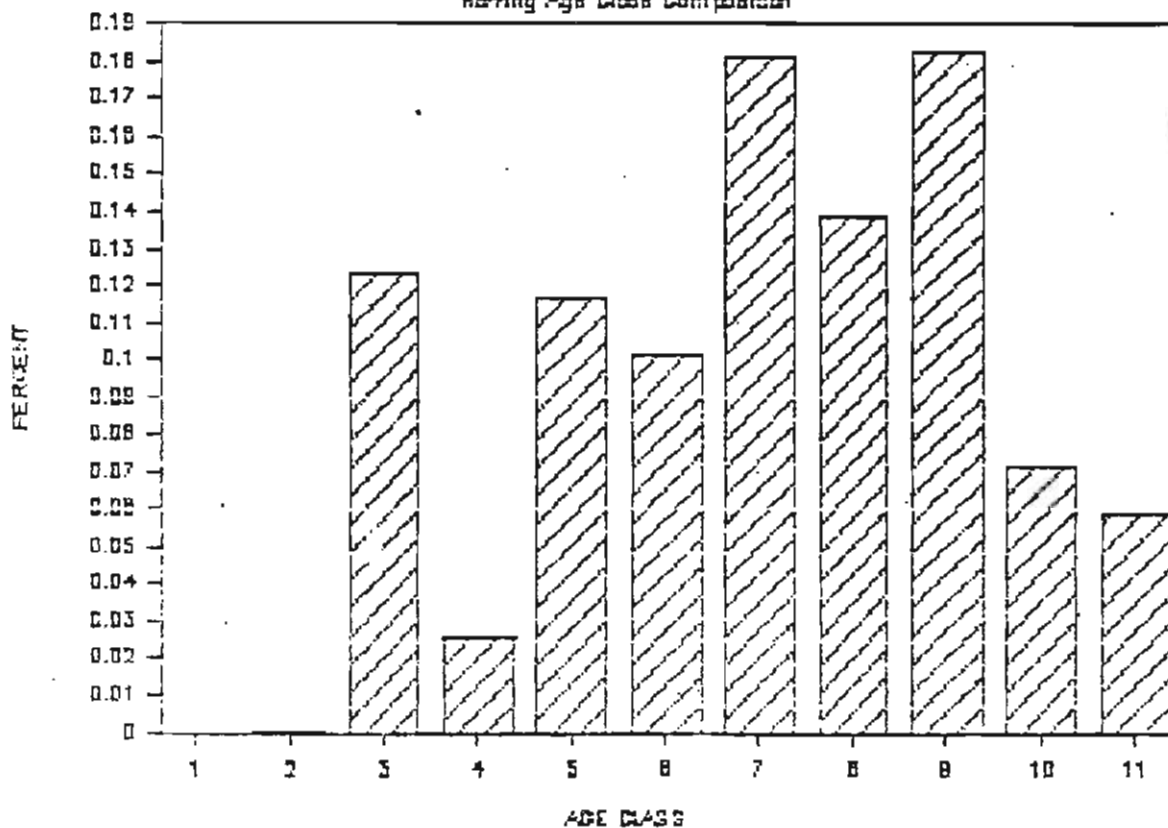


Figure 12 Comparison of the age class composition of the 1985 and 1986

Table 1. Lower Cook Inlet salmon catch by species, district and gear, 1986.

DISTRICT	KING	SOCKEYE	COHO	PINK	CHUM	TOTAL
SOUTHERN						
Set Net	745	21,807	2,827	14,244	2,426	42,049
Seine	31	15,031	268	528,277	3,134	546,741
Total	776	36,838	3,095	542,521	5,560	588,790
OUTER	6	48,472	5,052	401,755	11,701	466,986
KAMISHAK	14	146,496	9,935	423,774	61,670	641,889
EASTERN	0	3,055	770	40,243	3,757	47,825
TOTAL	796	234,861	18,852	1,408,293	82,688	1,745,490
30 YEAR AVERAGE	392	76,792	7,812	793,562	124,709	1,003,267

* Preliminary Data.

Table 2. Lower Cook Inlet escapement goals, average observed, and 1986 escapements of pink salmon.

SOUTHERN DISTRICT	ESC. GOAL	AVE. ESC. 1/	1986 ESC
Humpy Creek	25,000 - 50,000	53,500	49,700
Tutka Lagoon	6,000 - 10,000	12,200	13,400
Seldovia Creek	25,000 - 35,000	38,400	28,200
Port Graham River	20,000 - 40,000	14,800	17,500
China Poot Bay	5,000	9,000	11,500
Barabara Creek	18,000 - 24,000	5,000	1,800
Total	99,000 - 164,000	132,900	122,100
OUTER DISTRICT			
Port Chatham Streams	10,000 - 15,000	10,000	11,500
Rocky River	50,000	19,800	12,000
Windy Left River	30,000 - 50,000	15,500	2,200
Windy Right River	10,000	4,700	2,500
Port Dick Creek	20,000 - 100,000	46,800	41,600
Island Creek	12,000 - 18,000	6,900	16,600
South Nuka Creek	10,000	13,000	7,000
Desire Lake Creek	10,000 - 20,000	10,900	32,000
James Lagoon	5,000 - 10,000	7,100	6,600
Total	157,000 - 283,000	134,700	132,000
KAMISHAK DISTRICT			
Big Kamishak River	20,000	31,000	5,000
Little Kamishak River	20,000	22,000	2,000
Amakdedori Creek	5,000	16,000	6,000
Bruin Bay River	25,000 - 50,000	74,000	1,200,000
Sunday Creek	10,000	11,000	109,000
Brown's Peak Creek	10,000	10,000	28,000
Total	90,000 - 115,000	164,000	1,350,000
EASTERN DISTRICT 2/			
Aialik Lagoon	5,000	5,500	6,000
Bear Creek	5,000	9,800	14,000
Salmon Creek	10,000	16,100	8,300
Mayor Creek	2,000	3,000	1,900
Clear Creek	2,000	1,300	-
Thumb Cove	4,000	3,300	4,000
Humpy Cove	2,000	3,000	900
Tonsina Creek	5,000	3,900	11,200
Total	35,000	46,500	46,300
LOWER COOK INLET TOTAL	381,000 - 597,000	478,700	1,650,400

1/ Average escapement figures are based on weir counts, ground and aerial surveys conducted between 1951 and 1986. For many streams only several years data exist.

2/ Average escapements for pinks are for even years only.

Table 3. Lower Cook Inlet escapement goals, average observed and 1986 escapements for chum salmon. 1/

OUTER DISTRICT	ESCAPEMENT GOAL (RANGE)	AVE. OBS. ESCAPE.	1986 Escape
Dogfish Lagoon	5,000 - 10,000	6,400	2,500
Port Chatham (streams)	*	1,500	200
Windy Right River	*	1,500	200
Windy Left River	*	1,300	-
Rocky River	20,000	9,000	2,000
Head End Creek	4,000	5,200	1,700
Island Creek	10,000 - 15,000	9,800	8,600
Middle Creek	*	2,000	300
Petrof River	2,000 - 5,000	3,000	600
Total	41,000 - 54,000	39,700	16,100
KAMISHAK DISTRICT			
Silver Beach (streams)	*	4,000	1,000
Main Left (streams)	5,000 - 10,000	6,000	3,000
Big Kamishak River	20,000	14,900	24,000
Little Kamishak River	20,000	12,000	17,000
McNeil River	10,000 - 20,000	24,500	22,000
Bruin River	5,000	7,400	2,000
Rocky Cove (Sunday Creek)	*	1,000	300
Ursus Cove (streams)	5,000 - 10,000	6,500	11,000
Cottonwood Creek	10,000	6,100	11,000
Iniskin River	10,000	8,900	5,900
Total	85,000 - 110,000	91,300	97,200
SOUTHERN DISTRICT			
Tutka Creek	*	1,100	100
Seldovia River	*	1,200	1,000
Port Graham River	4,000 - 8,000	2,100	600
Total	4,000 - 8,000	4,400	1,700
LOWER COOK INLET TOTAL	130,000 - 172,000	135,400	115,000

1/ Average escapement figures are based on weir counts and ground and aerial surveys conducted between 1951 and 1986. For many streams, only several years of data exist.

*No established goal.

Table 4. Lower Cook Inlet escapement goals, average observed and 1986 escapements for sockeye salmon.

	Escapement Goal	Average Escape.	1986 Escape
SOUTHERN DISTRICT			
English Bay	10,000 - 20,000	8,500	2,800
Clearwater Slough	*	-	-
Total	10,000 - 20,000	8,500	2,800
OUTER DISTRICT			
Desire Lake	10,000	8,300	10,000
Delight Lake	10,000	6,900	13,000
Anderson Beach	2,000	500	900
Total	22,000	15,700	23,900
EASTERN DISTRICT			
Aialik Lake	2,500 - 5,000	8,500	7,600
Bear Lake	1,000+	*	800
Total	3,500 - 6,000	8,500	8,400
KAMISHAK DISTRICT			
Mikfik Lake	5,000	6,700	7,800
Chenik Lake	10,000 - 20,000	2,400	7,000
Kamishak River	*	2,800	5,000
Douglas River	*	1,200	200
Douglas Beach	*	400	200
Total	15,000 - 25,000	13,500	20,200
LOWER COOK INLET TOTAL	50,500 - 73,000	46,200	55,300

*Data not available.

Table 5. Emergency Order commercial fishing periods in Lower Cook Inlet, 1986.

Number	Date	Description
2-F-H-001-86	April 16	Opens the Outer, Eastern and Kamishak Bay districts to herring sac roe fishing on April 20.
2-F-H-002-86	April 26	Closes waters of Kamishak Bay to herring seining between the latitudes of South Head and Kirschner Lake waterfalls at 10:00 a.m. Saturday, April 26.
2-F-H-003-86	April 26	Closes waters of Kamishak Bay to herring seining between the latitudes Amakdedori Creek and the Kirschner Lake waterfalls at 6:00 p.m. Saturday April 26.
2-F-H-004-86	April 28	Clarifies the closure line at South Head to be latitude 56°36' N. lat.
2-F-H-005-86	April 28	Closes waters of Kamishak Bay to herring seining north of the latitude of South Head located at 59°36' N. lat. at 12:00 noon Monday April 28.
2-F-H-006-86	April 28	Closes the entire Kamishak Bay district to herring sac roe fishing at 9:00 p.m. Monday April 28 and puts fishermen on a 24-hour notice for future openings in the Kamishak area.
2-F-H-007-86	May 2	Reopens waters of Iniskin Bay north of latitude 59°39.10' N. to herring seining for 2 hours from 5:00 until 7:00 p.m. Friday May 2. The opening will be by flare with a 10 second countdown on channel 10 on the marine VHF.
2-F-H-008-86	May 19	Reopens waters of Kamishak Bay south of Amakdedori Creek to herring seining for two hours from 7:30 until 9:30 a.m. Monday May 19.
2-F-H-009-86	May 19	Reopens waters of Kamishak Bay south of Amakdedori Creek to herring seining for three hours from 7:00 until 10:00 p.m. Monday May 19.
2-F-H-010-86	May 21	Reopens waters of Kamishak Bay south of Amakdedori Creek to herring seining for three hours from 11:30 a.m. until 2:30 p.m. Wednesday May 21.

Table 5. Continued

Number	Date	Description
2-F-H-011-86	May 21	Reopens waters of Kamishak Bay south of Amakdedori Creek to herring seining for 2½ hours from 8:00 until 10:30 p.m. Wednesday May 21.
2-F-H-012-86	May 28	Opens the Kamishak-Douglas, McNeil River and Bruin Bay subdistricts to salmon seining effective at 6:00 a.m. Monday June 2.
2-F-H-013-86	June 11	Closes the entire Lower Cook Inlet area to herring sac roe fishing at 9:00 p.m. Friday June 13.
2-F-H-014-86	June 13	Extends the weekly fishing period in the Kamishak Bay district to seven days per week at 12:00 noon Friday June 13.
2-F-H-015-86	June 13	Closes the set gillnet fishery in the Port Graham subdistrict at 6:00 a.m. Saturday June 14 and extends the subsistence fishery in the Port Graham subdistrict from 6:00 a.m. Saturday June 14 until 6:00 a.m. Saturday June 21.
2-F-H-016-86	June 16	Opens McNeil Lagoon to salmon seining for 1 hour and 45 minutes from 8:45 until 10:30 p.m. Monday June 16. The opening will be by flare and the upper limit of fishing in the lagoon will be designated by ADF&G personnel on the grounds.
2-F-H-017-86	June 20	Opens McNeil Lagoon by flare for 1½ hours from 12:00 noon until 1:30 p.m. Thursday June 19 and reduces fishing time in the Kamishak district back to the standard two 48 hour weekly periods effective at 6:00 a.m. Saturday June 21.
2-F-H-018-86	June 19	Closes the Port Graham subdistrict to salmon subsistence fishing at 6:00 a.m. Saturday June 21.

Table 5. Continued

Number	Date	Description
2-F-H-019-86	June 22	Opens Tutka Bay and China Poot Bay sub-districts at 6:00 a.m. Thursday June 26. Removes the markers at the HEA powerline in China Poot Bay and allows fishing up to the markers at the stream mouth.
2-F-H-020-86	June 23	Opens McNeil Lagoon to seining for two hours from 3:00 until 5:00 p.m. Monday June 23.
2-F-H-021-86	June 25	Opens McNeil Lagoon for two hours from 5:00 until 7:00 p.m. Wednesday June 25 and for 1½ hours from 5:00 until 6:30 a.m. Thursday June 26.
2-F-H-022-86	June 26	Opens McNeil Lagoon for 1½ hours from 6:00 until 7:30 p.m. Thursday June 26 and from 6:00 until 7:30 a.m. Friday June 27.
2-F-H-023-86	July 1	Opens McNeil Lagoon for two hours from 9:30 until 11:30 p.m. Tuesday July 1.
2-F-H-024-86	July 2	Opens the East Nuka subdistrict for 24 hours from 6:00 a.m. Friday July 4 until 6:00 a.m. Saturday July 5. A one mile radius closure around the mouth of Desire Lake Creek will be in effect and the markers at McCarty Lagoon are removed.
2-F-H-025-86	July 8	Opens the closed water area around the mouth of Chenik Creek for one hour from 4:00 until 5:00 p.m. Tuesday July 8. The opening will be by flare.
2-F-H-026-86	July 8	Extends fishing time in the Chenik closed area from 5:00 p.m. Tuesday July 8 until 6:00 a.m. Wednesday July 9.
2-F-H-027-86	July 8	Opens the East Nuka and Aialik Bay sub-districts and McCarty Lagoon effective at 6:00 p.m. Tuesday July 9.
2-F-H-028-86	July 9	Opens the Chenik Creek closed area from 1:00 p.m. until 8:00 p.m. Wednesday July 9.

Table 5. Continued

Number	Date	Description
2-F-H-029-86	July 10	Opens Tutka Lagoon by flare for two hours from 4:30 until 6:30 p.m. Thursday July 10.
2-F-H-030-86	July 10	Reopens the Chenik closed area for 8 hours from 12:00 noon until 8:00 p.m. Thursday July 10.
2-F-H-031-86	July 10	Extends fishing time in the East Nuka subdistrict to 7 days per week & removes the markers at Desire Lake effective at 12:00 noon Thursday July 10.
2-F-H-032-86	July 12	Reopens the Port Graham subdistrict to set gillnetting effective at 6:00 a.m. Monday July 14.
2-F-H-033-86	July 14	Reopens the Chenik closed area by flare for 30 minutes from 6:00 until 6:30 p.m. Monday July 14.
2-F-H-034-86	July 14	Extends fishing time in the Bruin Bay subdistrict to 7 days per week opens the "pothole" and removes the markers at Amakdedori Creek at 12:00 noon Monday July 14.
2-F-H-035-86	July 14	Opens Aialik Lagoon to seining at 8:30 p.m. Monday July 14 and opens the Humpy Creek subdistrict at 6:00 a.m. Tuesday July 15.
2-F-H-036-86	July 14	Opens the Rocky Cove subdistrict south of the mouth of Sunday Creek from 6:30 p.m. Monday July 14 until 12:00 noon Tuesday July 15. That portion of the Rocky Cove subdistrict north of the mouth of Sunday Creek will remain closed.
2-F-H-037-86	July 15	Extends fishing time in the Rocky Cove subdistrict south of the mouth of Sunday Creek from 12:00 noon Tuesday July 15 until further notice and allows fishing in the Kamishak Bay district seven days per week until further notice. Also, the markers at Humpy Creek were adjusted in towards the mouth at 3:00 p.m. Tuesday July 15.

Table 5. Continued

Number	Date	Description
2-F-H-038-86	July 17	Opens the Seldovia Bay and Port Graham Bay subdistricts to seining at 6:00 p.m. Thursday July 17 and opens Tutka Lagoon to seining by flare for 30 minutes from 9:45 until 10:15 p.m. Thursday July 17
2-F-H-039-86	July 18	Opens the Port Dick South section of the Port Dick subdistrict to seining at 6:00 a.m. Monday July 21, but keeps the North shore section closed. It also opens the Resurrection Bay subdistrict north of the latitude of Caines Head and including Humpy Cove to seining for two 12 hour periods from 6:00 a.m. until 6:00 p.m. Monday July 21 and Thursday July 24. A 500 yard radius closure will be in effect at Tonsina Creek.
2-F-H-040-86	July 18	Closes the Rocky Cove subdistrict to fishing at 3:30 p.m. Friday July 18.
2-F-H-041-86	July 21	Opens the Chenik Creek closed area to seining by flare for one hour from 2:00 until 3:00 p.m. Monday July 21 and re-opens the Rocky Cove subdistrict at 1:10 p.m. Monday July 21.
2-F-H-042-86	July 22	Opens the Ursus Cove subdistrict from 6:00 a.m. Wednesday July 23 until 6:00 a.m. Wednesday July 30 on a seven day per week basis. Waters of the Port Dick North section west of the western Department marker at the head of Port Dick Bay are opened to fishing at 6:00 p.m. Tuesday July 22.
2-F-H-043-86	July 23	Allows fishing up to the creek mouth of Brown's Peak Creek in Ursus Cove at 9:00 a.m. Wednesday July 23. It also puts the East Nuka subdistrict back on the regular two 48 hour weekly fishing periods and puts the markers at Desire Lake Creek back in effect at 6:00 a.m. Thursday July 24.
2-F-H-044-86	July 24	Opens Tutka Lagoon by flare for 30 minutes from 4:00 until 4:30 p.m. Thursday July 24. Puts fishing time in the McNeil River and Kamishak-Douglas subdistricts back on the regular two 48 hour weekly periods effective at 6:00 a.m. Saturday July 26.

Table 5. Continued

Number	Date	Description
2-F-H-045-86	July 25	Opens the Resurrection Bay subdistrict north of the latitude of Caines Head and including Humpy Cove for two 12 hour periods from 6:00 a.m. until 6:00 p.m. Monday July 28 and Thursday July 31. A 500 yard radius closure is in effect at Tonsina Creek
2-F-H-046-86	July 26	Opens the Chenik Creek closed area and closes the McNeil River and Kamishak-Douglas subdistricts to seining at 6:00 a.m. Saturday July 27.
2-F-H-047-86	July 28	Opens the entire North section of the Port Dick subdistrict to seining at 3:00 p.m. Monday July 28.
2-F-H-047a-86	July 28	Extends fishing time in the Ursus Cove subdistrict from 6:00 a.m. Wednesday July 30 until further notice on a seven day per week basis.
2-F-H-048-86	July 30	Moves the markers at the head of Port Dick Bay closer to Port Dick Creek effective at 6:00 a.m. Thursday July 31 and puts the markers at the HEA powerline in China Poot Bay back in effect at 6:00 a.m. Saturday August 2.
2-F-H-049-86	August 1	Reopens the Kamishak-Douglas McNeil River subdistricts to seining at 3:00 p.m. Friday August 1 on a seven day per week basis.
2-F-H-050-86	August 1	Opens waters of the Resurrection Bay subdistrict north of the latitude of Caines Head including Humpy Cove to seining for two 12 hour periods from 6:00 a.m. until 6:00 p.m. Monday August 4 and Thursday August 7.
2-F-H-051-86	August 7	Removes markers at Desire Lake Creek and extends fishing time to seven days per week effective at 12:00 noon Thursday August 7.
2-F-H-052-86	August 13	Adjusts markers on the Southeast side of the Island Creek closed water area moving them closer to the stream and removes the markers at the HEA powerline in China Poot Bay allowing fishing up to the markers at the Creek mouth effective at 6:00 a.m. Thursday August 14.

Table 5. Continued

Number	Date	Description
2-F-H-053-86	August 14	Opens the Kamishak district to seining north of the latitude of Ursus Head, except for the Cottonwood Bay subdistrict at 6:00 p.m. Thursday August 14 on the regular two 48 hour weekly fishing periods. It also opens the Cottonwood Bay subdistrict for 6 hours from 4:00 until 10:00 p.m. Friday August 15 but keeps waters of Cottonwood Bay west of the longitude of Diamond Point closed.
2-F-H-053a-86	August 19	Closes waters of Port Dick Bay west of a line from the Department marker on the western shore of Middle Creek to the southeast corner of Shelter Cove at 12:00 noon Tuesday August 19 and allows fishing inside the Island Creek closed area for 6 hours from 12:00 noon until 6:00 p.m. Tuesday August 19.
2-F-H-054-86	August 23	Opens the Cottonwood Bay subdistrict to seining for three hours from 9:00 a.m. until 12:00 noon Saturday August 23.
2-F-H-055-86	August 23	Reopens the Cottonwood Bay subdistrict to seining for three hours from 9:00 a.m. until 12:00 noon Saturday August 23.
2-F-H-056-86	August 24	Reopens the Cottonwood Bay subdistrict to seining at 9:00 a.m. Sunday August 24 and allows the area to remain open on the regular two 48 hour weekly fishing periods.
2-F-H-057-86	August 26	Reduces fishing time in the East Nuka subdistrict back to the regular two 48 hour weekly fishing periods effective at 6:00 a.m. Wednesday August 27, extends fishing in the East Nuka subdistrict until 6:00 a.m. Wednesday September 10 and extends fishing in the Kamishak district on a seven day per week basis until 6:00 a.m. Wednesday September 10.
2-F-H-058-86	Sept. 12	Reopens the East Nuka subdistrict to fishing from 6:00 p.m. Friday September 12 until 6:00 a.m. Saturday September 27. Fishing is allowed seven days per week, McCarty Lagoon is open to fishing and no markers will be in effect at Desire Lake Creek.

Table 6. Preliminary Estimate of Adult Pink Salmon return to Tutka Bay and Lagoon, 1986.

Commercial Harvest:		
Seine		394,922
Set Net		5,228
Sub-Total		400,150
Sport Catch		8,000
Escapement:		
Tutka Creek and Channel		13,400
Egg-Take		43,000
Total Return		464,550

Tutka Lagoon Hatchery contribution estimated at 441,323 or 95% of the total run.

Table 7. Tutka Bay (241-16) Pink Salmon Seine Catch by Statistical Week.

Stat Week	1978		1979		1980		1981		1982		1983	
	Entire Subdistrict	Lagoon Only	Entire Subdistrict	Lagoon Only	Entire Subdistrict	Lagoon Only	Entire Subdistrict	Lagoon Only	Entire Subdistrict	Lagoon Only	Entire Subdistrict	Lagoon Only
25												
26			3,786		3,691		8,647					
27			129,659		17,630		101,301		3,560		13,782	
28	24,683		178,178	68,500	76,810		239,547		49,703	8,500	92,230	
29	19,077		50,873	24,000	130,608	35,074	301,919	42,000	40,730		152,038	35,000
30	83,681	47,143	22,574	20,700	34,669		166,796	35,000	24,933		247,119	35,000
31	19,980	17,143	15,392	14,500	22,014	20,500	107,918	12,000	44,326	24,000	68,522	18,000
32	12,357	11,100			22,755	21,481	47,096	10,000	4,091		28,380	10,000
33	818						19,071	13,700	10,434	11,000	1,751	
34							7,543	7,243	—			
Total Seine Catch	160,596	75,386	400,462	127,700	308,177	77,055	999,838	119,943	177,777	57,100	603,822	98,000
Set Net Catch	7,266		21,354		13,336		26,736		7,099		11,637	
Sport Catch	—		2,000		5,000		6,000		2,000		5,000	
Egg Take	21,100		21,200		26,897		22,000		41,200		53,800	
Escapement	15,000		10,600		17,300		28,000		18,500		12,900	
Total Return	203,962		455,616		370,710		1,082,574		246,576		687,159	

Table 7. (continued)

Stat Week	1984		1985		1986	
	Entire Subdistrict	Lagoon Only	Entire Subdistrict	Lagoon Only	Entire Subdistrict	Lagoon Only
25						
26	7,312		17,656		1,992	
27	40,700		63,632		49,948	
28	91,774	38,200	129,020	31,300	175,863	47,000
29	76,639	44,700	111,211	34,800	134,039	36,900
30	14,629		40,583		32,504	14,500
31			45,644	22,200	570	
32			44,685	17,600	26	
33			23,397	13,800		
34			8,771	5,200		
Total Seine Catch	231,054	82,900	484,293	124,900	394,922	98,400
Set Net Catch	10,000		6,888		5,228	
Sport Catch	8,000		8,000		8,000	
Egg Take	41,000		43,000		43,000	
Escapement	10,500		14,000		13,400	
Total Return	300,554		556,181		464,550	

Table 8. Lower Cook Inlet salmon catch by species, 1957-1986. 1/

Year	King	Red	Coho	Pink	Chum	Total
1957	419	26,917	1,765	285,613	206,450	521,164
1958	120	19,450	1,796	949,766	124,482	1,095,614
1959	132	21,637	6,352	124,748	110,838	263,707
1960	27	24,726	2,692	611,647	116,082	755,174
1961	41	22,776	1,619	303,377	55,593	383,406
1962	60	25,286	7,727	2,248,341	179,259	2,460,673
1963	96	15,121	6,736	203,616	138,510	364,079
1964	91	20,654	9,460	1,055,417	323,335	1,408,957
1965	10	14,002	862	115,598	28,076	158,548
1966	62	15,333	5,411	579,240	129,062	729,108
1967	176	29,044	2,726	375,488	85,445	492,879
1968	64	95,242	4,883	585,441	75,134	760,764
1969	64	122,796	623	202,444	61,203	387,130
1970	107	22,312	4,860	574,284	224,158	825,721
1971	73	22,234	4,561	392,871	148,602	568,341
1972	88	57,897	2,234	28,663	75,543	164,425
1973	145	29,209	2,101	307,403	115,513	454,371
1974	183	27,428	6,514	50,601	19,210	103,936
1975	143	28,142	6,211	1,063,432	21,646	1,119,574
1976	450	58,159	3,216	136,445	50,822	249,092
1977	217	101,597	3,232	1,292,153	145,778	1,542,977
1978	1,747	156,404	6,529	352,561	73,518	590,759
1979	1,238	64,417	12,250	2,986,534	223,028	3,287,467
1980	424	69,442	14,505	889,703	73,492	1,047,566
1981	1,086	110,255	10,778	3,276,221	339,053	3,737,393
1982	1,066	131,320	46,892	551,522	197,987	928,787
1983	873	187,645	11,375	927,451	192,319	1,319,663
1984 2/	713	270,756	17,271	698,276	93,804	1,080,820
1985	1,043	278,694	10,327	1,229,717	30,638	1,550,419
1986 2/	796	234,861	18,852	1,408,293	82,688	1,745,490
30 Year Total	11,754	2,303,756	234,360	23,806,866	3,741,268	30,098,004
30 Year Average	392	76,792	7,812	793,562	124,709	1,003,267
% of Total	0.04	7.65	0.78	79.10	12.43	100.00

1/ Data source: final IBM computer runs, 1957-1986 and processor catch reports.

2/ Preliminary data.

Table 2 Summary of subsistence fishermen in Lower Cook Inlet by area of residence.

Area Residence of Permittee	Homer		Anchorage Area		Halibut Cove		Anch. Pt. Ninilchik		Seldovia		Pt Graham/ Eng. Bay		Kenai/ Soldotna		Other		Total Permits Issued
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	
1974	108	73.0	20	13.5	6	4.1	4	2.7	1	0.7	3	2.0	5	3.4	1	0.7	148
1975	118	75.2	13	8.3	6	3.8	7	4.5	5	3.2	2	1.3	4	2.5	2	1.3	157
1976	182	70.0	24	9.2	9	3.5	25	9.6	5	1.9	4	1.5	6	2.3	5	1.9	260
1977	153	77.3	8	4.0	8	4.0	17	8.6	7	3.6	0	0	2	1.0	3	1.6	198
1978	214	68.8	40	12.9	5	1.6	30	9.6	12	3.8	3	1.0	4	1.3	3	1.0	311
1979	276	62.7	67	15.2	2	0.5	61	13.9	3	0.7	0	0	11	2.5	20	4.6	440
1980	310	58.2	81	15.2	0	0	80	15.0	7	1.3	0	0	42	7.9	13	2.4	533
1981	274	71.4	43	11.2	8	2.1	37	9.6	3	0.8	1	0.3	14	3.6	4	1.0	384
1982	295	74.7	19	4.8	9	2.3	44	11.1	0	0	0	0	7	1.8	21	5.3	395
1983	267	77.9	24	7.0	3	0.9	33	9.6	8	2.3	0	0	0	0	8	2.3	343
1984	266	72.0	20	5.4	6	1.6	62	16.8	5	1.4	1	0.3	5	1.4	4	1.1	369
1985	251	79.4	15	4.8	6	1.9	33	10.4	6	1.9	0	0	2	0.6	3	1.0	316
1986	280	82.8	18	5.3	4	1.2	29	8.6	1	0.3	0	0	1	0.3	5	1.5	338
13 Year Total	2,994	-	392	-	72	-	462	-	63	-	14	-	103	-	92	-	4,192
13 Year Average	230	71.4	30	9.4	6	1.7	36	11.0	5	1.5	1	0.3	8	2.5	7	2.2	322

Table 10. Subsistence fishery catches for the Southern district of Cook Inlet, 1969-1986.

Year	Issued	Returned	Permits Not		King	Sockeye	Coho	Pink	Chum	Other	Total
			Fished	Returned							
1969	47	44	9	93.6	0	9	752	38	0	17	816
1970	78	73	18	93.6	0	12	1,179	143	13	39	1,386
1971	112	95	42	84.8	2	16	1,549	44	7	20	1,638
1972	135	105	41	77.8	1	11	975	48	69	19	1,123
1973	143	128	46	89.5	0	18	1,304	84	40	9	1,455
1974	148	118	66	80.3	0	16	376	43	77	27	539
1975	292	276	55	94.5	4	47	1,960	632	61	95	2,799
1976	242	221	83	91.3	16	46	1,962	1,513	56	75	3,668
1977	197	179	42	90.9	12	46	2,216	639	119	84	3,116
1978	311	264	113	84.9	4	35	2,482	595	34	89	3,239
1979	437	401	163	91.8	6	37	2,118	2,251	41	130	4,583
1980	533	494	195	92.7	43	32	3,491	1,021	25	153 1/	4,765
1981	384	374	100	97.4	25	64	4,314	732	89	+100	5,324
1982	395	378	71	95.7	39	46	7,303	955	123	8	8,474
1983	343	330	118	96.2	4	21	2,525	330	40	2	2,922
1984	369	349	127	94.6	4	25	3,666	821	87	25	4,628
1985	316	288	97	91.1	5	43	3,372	166	35	3	3,624
1986	338	310	63	91.7	7	68	3,831	3,132	56	0	7,094
<hr/>											
18 Year											
Total	4,820	4,427	1,449	-	172	592	45,375	13,187	972	895	61,193
<hr/>											
18 Year											
Average	268	246	81	91.9	10	33	2,521	733	54	50	3,400

1/ Steelhead.

Table 11 Port Graham subsistence salmon harvest by year and month.

Year	Month	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	May 10-31	31	543	0	0	0	574
	June 1-15	11	986	0	7	1	1,005
	August 16-31	0	1	173	180	40	394
	Sept. 1-30	0	0	452	41	2	495
	Totals	42	1,530	625	228	43	2,468
1982	May 10-31	32	264	0	0	3	299
	June 1-30	25	339	0	1	23	388
	August 16-31	4	5	209	229	76	523
	Sept. 1-30	0	14	321	121	14	470
	Totals	61	622	530	351	116	1,680
1983	May 10-31	19	368	0	0	0	387
	June 1-15	38	697	0	5	1	741
	August 16-31	0	1	232	76	53	362
	Sept. 1-30	0	0	208	88	11	307
	Totals	57	1,066	440	169	65	1,797
1984	May 10-31	19	971	0	1	0	991
	June 1-15	2	1,119	0	0	1	1,122
	August 16-31	0	5	121	214	5	345
	Sept. 1-30	0	0	45	0	0	45
	Totals	21	2,095	166	215	6	2,503
1985	May 10-31	114	83	0	0	0	197
	June 1-22	42	384	9	16	22	473
	August 16-31	0	2	49	16	0	67
	Sept. 1-30	0	0	132	1/ 10	0	142
	Totals	156	469	190	42	22	879
1986	May 10-31	73	22	0	0	1	96
	June 1-21	45	230	1	2	12	290
	August 16-31	0	2	40	164	0	206
	Sept. 1-30	0	25	138	61	0	224
	Totals	118	279	179	227	13	816

*Estimate

**Some harvest, no estimate.

***More sport fish effort than subsistence effort due to cohos moving directly into the stream rather than milling in the bay. Est. sport coho harvest at 300.

1/ Est. 350 additional sport caught coho.

Table 12. English Bay subsistence salmon harvest by year and month.

Year	Month	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	May 10-31	1	609	0	0	0	610
	June 1-15	10	263	0	13	0	286
	August 16-31	0	37	0	296	14	347
	Sept. 1-30	0	25	214	139	0	378
	Totals	11	934	214	448	14	1,621
1982	May 10-31	5	280	0	6	7	298
	June 1-15	2	641	0	0	0	643
	August 1-31	3	315	119	674	0	1,111
	Sept. 1-30	0	13	756	724	29	1,522
	Totals	10	1,249	875	1,404	36	3,574
1983	May 10-31	0	807	0	0	0	807
	June 1-15	0	655	0	0	0	655
	August 16-31	0	210	65	363	0	638
	Sept. 1-30	0	112	302	0	0	414
	Totals	0	1,784	367	363	0	2,514
1984	May 10-31	16	755	0	0	0	771
	June 1-15	2	463	0	14	0	479
	August 16-31	0	7	170	390	0	576
	Sept. 1-30	0	215	0	0	0	215
	Totals	18	1,225	385	404	0	2,032
1985	May 10-31	0	201	0	0	0	200
	June 1-22	0	431	0	9	0	422
	August 16-31	5	54	236	184	2	481
	Sept. 1-30	0	10	294 1/	120	0	424
	Totals	5	696	530	313	2	1,527
1986	May 10-31	2	17	0	0	0	19
	June 1-21	2	238	0	0	1	241
	August 16-31	0	3	98	178	1	280
	Sept. 1-30	0	120	198	647	0	965
	Total	4	378	296	825	2	1,505

*Estimate.

**Some harvest, no estimate.

***More sport harvest, but no estimate.

1/ Est. 200 additional sport caught coho.

Table 13. Lower Cook Inlet Pacific herring catches in short tons by district, 1961-1986.

Year	District				Total
	Southern	Kamishak	Eastern	Outer	
1961	0	0	1	0	1
1962	0	0	0	0	0
1963	1	0	0	0	1
1964	+	0	0	0	+
1965	2	0	0	0	2
1966	0	0	7	0	7
1967	0	0	0	0	0
1968	20	0	0	0	20
1969	551	0	758	38	1,347
1970	2,709	0	2,100	0	4,809
1971	13	0	831	0	844
1972	1	0	30	0	31
1973	204	243	831	301	1,579
1974	110	2,114	47	384	2,655
1975	24	4,119	0	0	4,143
1976	0	4,842	0	0	4,842
1977	291	2,908	0	0	3,199
1978	17	402	0	0	419
1979	13	415	0	0	428
1980	0	0	0	0	0
1981	0	0	0	0	0
1982	0	0	0	0	0
1983	0	0	0	0	0
1984	0	0	0	0	0
1985	0	1,132	233	0	1,365
1986	0	1,959	167	28	2,154
Total	3,956	18,134	5,005	751	27,846
Average	283	2,015	501	188	1,071

Data Source: Final IBM runs.

Table 14. Kamishak Bay district Pacific herring biomass estimates by age class for 1986 and the 1987 harvest level computations.

Age	Percent	Biomass Estimate Less 1986 Harvest		Projected 1987 Harvest Level	
		Minimum	Expanded	Lower	Upper
1	0.00	0	0	0	0
2	0.03	5	6	0	1
3	7.91	1,499	1,902	150	190
4	2.48	470	597	47	60
5	11.27	2,134	2,709	213	271
6	10.40	1,970	2,500	394	500
7	19.23	3,643	4,624	729	925
8	15.02	2,846	3,612	569	722
9	19.58	3,709	4,708	742	942
10	7.74	1,467	1,862	293	372
11+	6.33	1,199	1,522	240	304
Totals	100.00	18,942	24,042	3,378	4,287

Table 15. Harvests, biomass estimates and harvest rates of Lower Cook Inlet Pacific herring by area, 1986.

Area	Harvest	Minimum Biomass (Short Tons)	Maximum Harvest Rate	Expanded Biomass (Short Tons)	Minimum Harvest Rate
1	130.4	*			
2	48.0	*			
3	17.0	*			
4	0	*			
5	224.0	2,000	11.2% **	2,800	8.0%
6	1,007.1	8,200	12.3% **	10,400	9.7%
7	727.8	9,700	7.5% **	12,800	5.7%
Totals	2,154.3	19,900	9.8% **	26,000	7.5%

* No estimate made.

** Kamishak district only.

Table 16. Age, sex and size data for herring from the commercial sac roe seine fishery in the Kanishak District, Lower Cook Inlet, 1986.

Sample Period	Age (years)	Sex			Total	Percent of Total	Weight			Std. Length		
		Male	Female	Unknown			Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	Number Measured
4/22	1	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	1	-	-	1	3.7	92	-	1	190	-	1
	4	-	1	-	1	3.7	132	-	1	219	-	1
	5	-	3	-	3	11.1	163	4.9	2	220	2.1	3
	6	1	2	-	3	11.1	174	8.5	3	229	4.2	3
	7	3	-	-	3	11.1	224	12.1	3	244	4.4	3
	8	-	4	-	4	14.8	230	24.6	4	244	11.0	4
	9	3	4	-	7	25.9	242	21.2	7	247	9.1	7
	10	1	2	-	3	11.1	274	18.5	3	254	7.2	3
	11+	1	1	-	2	7.4	309	13.4	2	256	4.9	2
Period total		10	17	-	27	100.0	223	52.4	26	239	16.6	27
4/23	1	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	4	1	-	5	2.1	91	10.9	5	192	8.6	5
	4	-	-	-	-	-	-	-	-	-	-	-
	5	11	12	-	23	9.6	158	22.6	23	221	8.9	23
	6	13	11	-	24	10.0	199	27.0	23	235	8.2	24
	7	25	36	-	61	25.5	217	26.2	60	242	9.0	61
	8	17	25	-	42	17.6	238	27.3	41	248	8.2	42
	9	22	29	-	51	21.3	254	30.7	51	250	8.9	51
	10	5	9	-	14	5.9	256	33.9	14	252	8.5	14
	11+	10	9	-	19	7.9	276	42.6	19	259	11.1	19
Period total		107	132	-	239	100.0	225	46.9	236	243	15.0	239
4/25	1	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	3	2	-	5	.6	91	10.1	5	180	37.1	5
	4	10	23	1	34	4.1	89	19.8	34	189	10.7	34
	5	49	42	-	91	11.1	143	37.1	91	215	21.1	91
	6	43	38	-	81	9.8	186	31.9	81	231	15.8	81
	7	83	63	-	146	17.7	214	31.9	144	240	10.4	146
	8	82	71	1	154	18.7	232	36.8	152	245	11.4	154
	9	88	94	-	182	22.1	248	27.3	182	249	8.1	182
	10	39	39	-	78	9.5	255	29.2	78	252	8.6	78
	11+	22	30	-	52	6.3	274	31.7	52	257	7.6	52
Period total		419	402	2	823	100.0	216	55.5	819	239	20.4	823

Table 16. (Continued)

4/28	1	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	2	4	-	6	1.1	98	21.7	6	172	48.0	6
	4	1	-	-	1	.2	144	-	1	218	-	1
	5	30	13	-	43	8.0	175	23.5	43	228	10.3	43
	6	30	34	-	64	12.0	198	25.5	61	236	9.5	64
	7	57	68	-	125	23.4	219	25.0	124	242	7.7	125
	8	42	45	-	87	16.3	235	28.3	87	246	9.2	87
	9	53	55	-	118	22.1	254	26.4	113	252	8.0	118
	10	31	22	-	53	9.9	269	27.5	52	255	7.9	53
	11+	15	23	-	38	7.1	283	38.0	38	258	11.7	38
Period total		271	264	-	535	100.0	231	42.5	525	245	15.1	535
5/ 2	1	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	4	1	-	5	1.5	126	70.4	5	229	41.9	5
	4	2	2	-	4	1.2	150	80.2	4	219	19.6	4
	5	29	19	-	48	14.8	161	21.5	48	226	8.4	48
	6	20	24	-	44	13.6	178	20.6	44	231	8.1	44
	7	39	42	1	82	25.3	211	34.3	82	241	8.7	82
	8	28	6	-	34	10.5	215	33.5	34	247	7.7	34
	9	34	28	-	62	19.1	239	35.2	62	250	8.5	62
	10	8	10	-	18	5.6	263	34.5	18	255	6.6	18
	11+	14	13	-	27	8.3	265	42.9	27	255	9.2	27
Period total		176	145	1	324	100.0	210	48.2	324	241	13.9	324
5/19	1	-	-	-	-	-	-	-	-	-	-	-
	2	1	-	-	1	.4	84	-	1	186	-	1
	3	85	86	-	171	61.5	88	12.1	171	184	11.2	171
	4	7	8	-	15	5.4	130	23.9	15	209	11.0	15
	5	32	27	-	59	21.2	155	22.4	59	219	9.6	59
	6	12	5	-	17	6.1	177	26.2	17	231	10.9	17
	7	2	5	-	7	2.5	190	33.9	7	233	10.6	7
	8	1	2	-	3	1.1	210	22.0	3	233	8.1	3
	9	1	3	-	4	1.4	224	23.0	4	240	9.1	4
	10	-	1	-	1	.4	321	-	1	268	-	1
	11+	-	-	-	-	-	-	-	-	-	-	-
Period total		141	137	-	278	100.0	117	43.7	278	198	22.1	278

Table 16 (Continued)

5/21	1	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-
	3	52	43	-	95	88.0	88	12.4	95	184	7.6	95
	4	3	2	-	5	4.6	115	17.9	5	202	9.2	5
	5	3	1	-	4	3.7	141	19.0	4	212	8.1	4
	6	-	2	-	2	1.9	185	27.6	2	232	4.9	2
	7	-	-	-	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-	-	-	-
	9	1	1	-	2	1.9	230	17.7	2	249	9.2	2
	10	-	-	-	-	-	-	-	-	-	-	-
	11+	-	-	-	-	-	-	-	-	-	-	-
Period total		59	49	-	108	100.0	95	28.3	108	188	14.2	108
All periods	1	-	-	-	-	-	-	-	-	-	-	-
	2	1	-	-	1	.0	84	-	1	186	-	1
	3	151	137	-	288	12.3	89	15.6	288	185	14.7	288
	4	23	36	1	60	2.6	107	34.3	60	198	15.4	60
	5	154	117	-	271	11.6	155	30.1	270	220	15.2	271
	6	119	116	-	235	10.1	188	28.2	231	233	11.9	235
	7	209	214	1	424	18.2	215	29.9	420	241	9.2	424
	8	170	153	1	324	13.9	232	33.4	321	246	10.1	324
	9	212	214	-	426	18.3	248	29.0	421	250	8.4	426
	10	84	83	-	167	7.2	261	30.2	166	253	8.2	167
	11+	62	76	-	138	5.9	275	37.5	138	257	9.6	138
Total		1185	1146	3	2334	100.0	202	63.9	2316	234	24.8	2334

Table 17. Age, sex and size data for herring from the commercial sac roe seine fishery in the Outer and Eastern districts of Lower Cook Inlet, 1986.

Sample Period	Age (years)	Sex			Percent		Weight		Std. Length			Number Measured
		Male	Female	Unknown	Total	of Total	Mean (gm)	Std. Dev.	Number Weighed	Mean (mm)	Std. Dev.	
5/ 6	1	-	-	-	-	-	-	-	-	-	-	-
	2	4	1	-	5	2.2	47	7.2	5	151	6.3	5
	3	85	66	-	151	65.7	83	13.0	150	181	10.5	151
	4	24	18	-	42	18.3	93	16.5	42	190	11.5	42
	5	3	6	-	9	3.9	113	18.5	9	202	8.1	9
	6	12	10	-	22	9.6	137	23.7	22	211	10.3	22
	7	1	-	-	1	.4	134	-	1	210	-	1
	8	-	-	-	-	-	-	-	-	-	-	-
	9+	-	-	-	-	-	-	-	-	-	-	-
Period total		129	101	-	230	100.0	90	23.4	229	185	15.1	230
5/ 7	1	-	-	-	-	-	-	-	-	-	-	-
	2	21	6	-	27	9.2	50	4.6	27	156	5.1	27
	3	98	88	-	186	63.3	80	13.2	186	179	8.2	186
	4	17	17	-	34	11.6	99	18.6	34	189	15.6	34
	5	17	8	-	25	8.5	123	17.9	25	205	9.4	25
	6	6	13	-	19	6.5	157	29.8	19	216	14.2	19
	7	1	2	-	3	1.0	206	23.2	3	239	9.5	3
	8	-	-	-	-	-	-	-	-	-	-	-
	9+	-	-	-	-	-	-	-	-	-	-	-
Period total		160	134	-	294	100.0	83	31.4	294	183	17.9	294
All periods	1	-	-	-	-	-	-	-	-	-	-	-
	2	25	7	-	32	6.1	49	5.1	32	155	5.5	32
	3	183	154	-	337	64.3	81	13.2	336	180	9.3	337
	4	41	35	-	76	14.5	95	17.6	76	190	13.4	76
	5	20	14	-	34	6.5	121	18.4	34	204	9.1	34
	6	18	23	-	41	7.8	146	28.3	41	214	12.4	41
	7	2	2	-	4	.8	188	40.5	4	232	16.5	4
	8	-	-	-	-	-	-	-	-	-	-	-
	9+	-	-	-	-	-	-	-	-	-	-	-
Total		289	235	-	524	100.0	90	28.2	523	184	16.7	524

Appendix Table 1. Salmon fishing licenses and permits issued and fished in Lower Cook Inlet, 1960-1986.

Seines						
Year	Gear License	Permanent Permit	Interim Permit	Total	Seines Fished	Set Nets Fished
1960	95			95		
1961	89			89		
1962	91			91		
1963	112			112		
1964	108			108		
1965	72			72		
1966	77			77	75	
1967	58			58	54	
1968	91			91	88	
1969	75			75	17	
1970	89			89	9	
1971	81			81	32	
1972	83			83	52	
1973	86			86	49	
1974	110			110	49	32
1975		49	51	100	63	27
1976		63	16	79	53	25
1977		72	10	82	72	26
1978		74	9	83	72	39
1979		75	9	84	75	38
1980		75	9	84	83	40
1981		75	10	85	85	40
1982		77	7	84	69	39
1983		78	5	83	83	24
1984 1/		78	3	81	39	35
1985		80	1	81	51	34
1986 1/		73	0	73	62	34
Total		869	130	2,316	1,232	433
Average		72	11	86	59	33

*Data source: CFEC microfiche printouts and final IBM computer runs.

1/ Preliminary Data.

Appendix Table 2. Ex-vessel value of Lower Cook Inlet commercial salmon harvest in thousands of dollars by species, 1960-1986.

Year	King	Sockeye	Coho	Pink	Chum	Total
1960	0	36	3	287	127	453
1961	0	33	2	144	36	215
1962	0	37	8	1,056	108	1,209
1963	1	22	7	87	84	201
1964	0	30	9	369	194	602
1965	0	21	1	34	20	76
1966	0	23	5	237	82	347
1967	1	45	3	157	58	264
1968	0	152	5	311	57	525
1969	0	219	1	137	46	403
1970	1	35	6	273	215	530
1971	1	38	7	248	144	438
1972	1	130	6	22	146	305
1973	3	113	5	310	251	682
1974	5	283	30	100	77	495
1975	3	106	27	1,456	71	1,663
1976	7	287	13	207	217	731
1977	7	620	9	1,719	604	2,959
1978	62	1,516	52	370	341	2,341
1979	36	621	68	4,495	1,097	6,317
1980	12	336	64	1,082	298	1,792
1981	18	706	60	5,334	1,291	7,409
1982	28	780	367	318	820	2,313
1983	10	685	53	584	478	1,810
1984 2/	23	1,393	120	562	216	2,314
1985	47	1,637	86	974	68	2,812
1986 2/	21	1,337	132	1,058	187	2,735
27 Year Total	287	11,241	1,149	21,931	7,333	41,941
27 Year Average	11	416	43	812	272	1,553

1/ Values obtained by using the formula: average price per lb. x average weight of fish x catch = Ex-vessel value.

2/ Preliminary data.

Appendix Table 3. Average salmon price per pound by species in dollars, Lower Cook Inlet, 1960-1986. 1/

Year	King	Sockeye	Coho	Pink	Chum
1960	0.25 2/	0.27	0.18	0.15	0.16
1961	0.24 2/	0.24	0.15	0.11	0.08
1962	0.23 2/	0.27	0.16	0.15	0.07
1963	0.25 2/	0.27	0.15	0.13	0.08
1964	0.24 2/	0.27	0.15	0.10	0.07
1965	0.22 2/	0.24	0.11	0.08	0.08
1966	0.22 2/	0.24	0.14	0.11	0.08
1967	0.26	0.26	0.15	0.11	0.08
1968	0	0.25	0.17	0.18	0.09
1969	0	0.27	0.23	0.17	0.13
1970	0.35	0.27	0.18	0.12	0.13
1971	0.53	0.28	0.24	0.18	0.15
1972	0.45	0.36	0.44	0.20	0.28
1973	0.93	0.48	0.39	0.27	0.29
1974	0.76	1.54	0.72	0.48	0.56
1975	0.61	0.61	0.49	0.37	0.43
1976	0.91	0.77	0.59	0.37	0.48
1977	1.07	0.86	0.55	0.35	0.45
1978	1.09	1.31	0.97	0.30	0.54
1979	1.54	1.53	0.89	0.43	0.60
1980	1.30	0.88	0.85	0.38	0.52
1981	1.35	1.05	0.65	0.44	0.47
1982	1.29	0.99	0.87	0.18	0.46
1983	0.50	0.73	0.65	0.21	0.27
1984	1.29	1.05	0.77	0.23	0.25
1985	1.60	1.25	0.85	0.22	0.27
1986	1.25	1.32	0.85	0.22	0.28

1/ 1960-1974 values obtained (except as noted) by using the formula:
 Avg. price/lb. x avg. weight/fish x catch = ex-vessel value. Ex-vessel values obtained from tables 34 & 39 in Lower Cook Inlet status report. Avg. weight/fish from commercial fish catch & production statistical leaflet for Cook Inlet. Values do not reflect any retroactive price increases paid after the fishing seasons.

2/ Values obtained by using formula:

$$\text{Avg. price/lb.} = \frac{\text{Avg. price/fish}}{\text{Avg. weight/fish}}$$

Avg. weight/fish from statistical leaflet. Avg. price/fish from annual management reports.

Appendix Table 4. Salmon average weight per fish in pounds,
Lower Cook Inlet, 1960-1986. 1/

Year	King	Sockeye	Coho	Pink	Chum
1960	20.2	5.4	6.2	3.2	6.8
1961	20.5	6.0	8.2	4.5	7.8
1962	21.5	5.4	6.4	3.2	8.0
1963	19.7	5.4	7.1	3.4	7.2
1964	20.8	5.4	6.3	3.5	8.4
1965	22.2	6.2	10.1	3.6	8.7
1966	23.1	5.9	6.4	3.6	7.5
1967	21.9	6.0	7.2	3.9	8.1
1968	26.2	6.3	5.9	3.0	8.3
1969	18.2	6.7	7.0	3.9	7.3
1970	26.6	5.8	6.8	3.9	7.1
1971	25.9	6.0	6.3	3.5	6.6
1972	25.0	6.2	6.1	3.9	6.9
1973	22.3	8.1	6.1	3.7	7.4
1974	36.1	6.7	6.4	4.1	7.2
1975	33.2	6.2	8.8	3.7	7.6
1976	16.1	6.4	7.0	4.1	8.9
1977	30.1	7.2	5.9	3.8	9.2
1978	32.3	7.4	8.2	3.5	8.6
1979	18.9	6.3	6.2	3.5	8.2
1980	21.7	5.5	5.2	3.2	7.8
1981	12.5	6.1	8.5	3.7	8.1
1982	20.6	6.0	9.0	3.2	9.0
1983	22.8	5.0	7.2	3.0	9.2
1984 2/	25.0	4.9	9.0	3.5	9.2
1985 2/	28.0	4.7	9.8	3.5	8.2
1985 2/	20.6	4.3	8.6	3.4	8.1
27 Year Total	607.0	161.5	195.9	97.0	215.4
27 Year Average	22.5	6.0	7.3	3.6	8.0

1/ 1960-1974 values obtained from commercial fish catch & production statistical leaflets. Remaining years from IBM computer runs.

2/ Preliminary data.

Appendix Table 5. Estimated pink salmon escapements in thousands of fish in the major spawning systems in Lower Cook Inlet. 1/

Stream	Year											
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Humpy Creek	10.0	22.6	56.0	34.7	18.5	28.0	30.0	25.0	24.7	5.4	55.2	45.0
China Poot	9.0	2.0	26.0	-	-	-	-	2.5	6.0	0.2	1.5	2.1
Tutka Lagoon	15.0	15.0	30.0	10.0	20.0	20.0	12.0	7.0	7.9	6.5	6.5	16.7
Barabara Creek	2.0	0.1	1.5	0.1	-	-	5.0	-	2.0	0.9	0.4	4.0
Seldovia River	25.0	25.0	50.0	13.0	60.0	30.0	86.0	55.0	53.2	60.0	23.0	31.1
Port Graham River	15.0	5.0	50.0	2.0	16.0	1.5	24.0	2.0	24.4	4.0	16.6	13.2
Dogfish Lagoon	2.0	-	3.0	-	-	-	-	-	-	-	-	0.3
Port Chatham Creeks	4.0	7.0	7.0	-	-	-	10.0	-	-	-	3.0	15.5
Windy Right Creek	8.0	10.0	12.5	4.9	6.2	2.0	7.0	6.0	2.8	3.2	2.1	13.0
Windy Left Creek	8.0	5.0	12.5	4.5	7.7	10.0	7.0	6.0	6.9	23.0	13.0	35.4
Rocky River	130.0	2.0	200.0	12.0	80.0	0.3	44.0	1.0	43.1	1.0	32.0	1.6
Port Dick Creek	35.0	14.0	40.0	16.0	31.5	50.0	35.0	20.0	29.0	12.0	34.5	97.8
Island Creek	23.2	2.0	15.0	3.6	30.0	0.5	7.0	0.5	4.3	0.1	5.5	0.1
South Nuka Creek	20.0	2.0	22.0	0.1	10.0	-	10.0	-	10.0	3.0	11.0	14.0
Desire Lake Creek	-	-	18.0	-	1.3	-	-	-	-	-	-	30.0
James Lagoon	-	-	-	-	-	-	-	-	-	-	-	-
Aialik Lagoon	-	-	25.0	0.3	-	-	2.0	-	-	-	-	-
Bear Creek	1.4	-	3.1	-	6.4	-	-	-	3.1	-	-	-
Salmon Creek	-	-	-	-	-	-	-	-	-	-	-	-
Mayor Creek	-	-	-	1.4	-	-	-	-	1.6	-	-	-
Clear Creek	-	-	0.2	-	1.5	-	-	-	-	0.1	-	-
Thumb Cove	-	-	-	-	-	-	-	-	-	-	-	-
Humpy Cove	-	-	-	-	-	-	-	-	-	-	-	-
Tonsina Creek	-	-	-	-	-	-	-	-	2.9	0.1	-	-
Big Kamishak River	-	-	100.0	75.0	75.0	-	13.0	-	-	-	-	-
Little Kamishak River	-	-	100.0	24.0	-	-	28.0	3.5	-	0.5	2.0	-
Amakdedori Creek	60.0	-	80.0	-	10.0	-	8.0	-	-	1.0	13.0	-
Bruin Bay River	18.0	-	300.0	25.0	-	-	20.0	0.5	-	5.0	40.0	22.0
Sunday Creek	1.5	-	5.0	2.0	-	-	20.0	-	-	1.0	2.0	43.0
Brown's Peak Creek	-	-	25.0	10.0	20.0	10.0	11.0	-	-	2.0	-	8.0
Total	387.1	111.7	1181.8	238.6	394.1	152.3	379.0	129.0	221.9	129.0	261.3	392.8

Appendix Table 5. (Continued)

Stream	Year											
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Humpy Creek	13.8	36.9	17.4	64.0	27.2	86.0	46.1	200.0	64.4	115.0	31.9	104.0
China Foot	1.0	6.0	5.2	21.6	2.0	3.9	11.2	20.6	12.3	5.0	3.1	14.1
Tutka Lagoon	1.5	6.5	2.6	17.6	11.5	14.0	15.0	10.6	17.3	21.1	18.5	12.9
Barabara Creek	0.6	-	0.2	22.7	0.2	5.7	1.4	10.0	5.8	16.8	2.1	14.8
Seldovia River	5.8	14.5	13.7	36.2	25.6	35.7	24.6	43.7	65.5	62.7	38.4	27.9
Port Graham River	2.4	7.0	2.8	27.3	6.5	20.6	6.7	32.7	40.2	18.4	28.9	4.6
Dogfish Lagoon	-	1.0	-	2.3	-	8.1	0.6	7.3	0.3	2.6	2.6	1.0
Port Chatham Creeks	1.0	5.0	0.2	7.7	-	14.2	0.3	20.8	7.7	11.2	2.0	3.5
Windy Right Creek	0.1	4.6	0.1	18.7	0.2	11.1	0.3	10.4	3.3	4.7	4.7	4.3
Windy Left Creek	0.4	12.9	0.1	9.7	0.2	47.3	1.1	74.8	10.9	31.3	4.4	11.9
Rocky River	8.2	2.0	1.5	4.4	2.7	36.7	8.2	85.0	6.4	25.0	6.6	16.6
Port Dick Creek	10.0	26.4	1.5	62.8	12.7	109.3	44.9	116.0	56.1	106.0	19.9	64.1
Island Creek	1.7	0.5	0.5	0.1	-	0.6	0.4	0.6	2.2	25.0	15.0	15.3
South Nuka Creek	0.3	16.0	-	28.0	-	12.0	-	15.0	0.3	16.0	0.4	22.2
Desire Lake Creek	0.3	3.0	-	0.4	0.6	0.8	1.0	3.0	16.0	5.0	12.0	8.5
James Lagoon	-	-	-	-	-	-	-	-	4.6	14.0	6.0	5.1
Aialik Lagoon	-	-	0.1	-	0.4	-	-	-	-	-	5.0	3.0
Bear Creek	0.5	-	4.9	-	10.0	-	7.8	-	13.3	0.4	7.9	0.8
Salmon Creek	-	-	-	-	16.9	-	11.0	-	15.5	0.1	21.0	0.5
Mayor Creek	0.4	-	0.5	-	4.3	-	2.9	-	3.8	0.6	3.4	-
Clear Creek	0.2	-	-	-	0.3	0.2	-	-	0.5	-	0.2	-
Thumb Cove	-	-	1.1	-	2.0	-	2.0	-	1.2	1.0	7.9	4.9
Humpy Cove	-	-	0.6	-	1.4	-	0.9	-	5.7	0.4	4.0	2.0
Tonsina Creek	-	-	1.4	-	5.7	-	1.5	-	0.7	0.2	7.5	5.4
Big Kamishak River	-	15.0	1.0	-	8.0	-	12.0	10.0	2.0	-	5.0	-
Little Kamishak River	-	13.0	-	-	6.0	-	0.4	3.5	0.6	-	2.2	-
Amakdedori Creek	0.2	3.0	1.0	5.0	-	-	0.9	6.0	3.8	1.5	6.3	0.2
Bruin Bay River	2.5	2.0	0.6	20.0	13.5	60.0	33.0	200.0	400.0	95.0	75.0	4.0
Sunday Creek	2.0	5.0	0.1	20.0	0.3	9.0	0.2	12.0	5.2	14.2	12.0	4.7
Brown's Peak Creek	1.2	3.2	0.1	10.0	1.2	13.0	0.9	15.0	2.3	17.7	3.5	1.7
Total	54.1	183.5	57.2	378.5	159.4	488.2	235.3	897.0	767.9	610.9	357.4	358.0

Appendix Table 5. (Continued)

Stream	Year			Total	Avg.
	1984	1985	1986		
Humpy Creek	84.2	117.0	49.7	1,412.7	52.3
China Foot	8.4	1.9	11.5	177.1	7.7
Tutka Lagoon	10.5	14.0	13.4	353.6	13.1
Barabara Creek	1.0	1.6	1.8	100.7	4.4
Seldovia River	14.2	22.8	28.2	970.8	36.0
Port Graham River	10.9	26.3	17.5	426.5	15.8
Dogfish Lagoon	0.6	0.2	0.4	32.3	2.2
Port Chatham Creeks	7.8	8.9	11.5	148.3	7.4
Windy Right Creek	3.4	5.4	2.5	151.0	5.6
Windy Left Creek	2.5	8.9	2.2	357.6	13.2
Rocky River	9.0	12.1	12.0	783.4	29.0
Port Dick Creek	44.6	65.3	41.6	1,196.0	44.3
Island Creek	35.0	27.9	16.6	233.2	8.6
South Nuka Creek	0.6	3.6	7.0	223.5	10.2
Desire Lake Creek	23.0	62.5	32.0	217.4	12.8
James Lagoon	4.0	9.0	6.6	49.3	7.0
Aialik Lagoon	4.0	9.4	6.0	55.2	5.5
Bear Creek	7.7	4.1	14.0	85.4	5.7
Salmon Creek	10.2	2.1	8.3	85.6	9.5
Mayor Creek	1.5	0.5	1.9	22.8	1.9
Clear Creek	0.8	0.3	0.4	4.7	0.4
Thumb Cove	4.2	14.5	4.0	42.8	4.3
Humpy Cove	2.5	5.0	0.9	23.4	2.3
Tonsina Creek	6.0	48.2	11.2	90.8	7.6
Big Kamishak River	-	-	5.0	321.0	21.4
Little Kamishak River	0.1	1.6	2.0	187.4	12.5
Amakdedori Creek	-	1.0	6.0	206.9	11.5
Bruin Bay River	110.0	3.5	1200.0	2,649.6	115.2
Sunday Creek	12.0	11.4	109.0	291.6	13.3
Brown's Peak Creek	6.8	7.0	28.0	197.6	9.0
Total	425.5	496.0	1651.2	11,098.2	411.0

Appendix Table 6. Estimated chum salmon escapements in thousands of fish in the major spawning systems in Lower Cook Inlet. 1/

Year	Port Graham	Dogfish Lagoon	Rocky River	Pt. Dick Head	Island Creek	Big Kamishak	Little Kamishak	McNeil River	Bruin Bay	Ursus Cove	Cottonwood Creek	Iniskin Bay	Total
1964	1.0	12.0	5.0	8.0	8.0	25.0	*	90.0	*	*	*	11.0	160.0
1965	*	3.5	*	3.5	4.0	*	*	*	*	*	*	0.7	11.7
1966	*	11.0	7.0	4.0	6.0	5.0	0.5	*	*	*	*	*	33.5
1967	*	15.0	5.0	3.0	5.0	*	*	*	*	*	*	*	28.0
1968	1.5	1.5	3.0	20.0	1.5	*	*	*	*	*	5.0	5.0	37.5
1969	*	*	3.0	4.5	4.0	*	*	*	*	*	*	*	11.5
1970	0.9	5.0	*	6.0	8.5	*	*	*	*	*	0.6	*	21.0
1971	1.0	5.0	7.0	3.0	3.5	*	*	*	1.0	*	9.0	13.0	42.5
1972	1.5	3.0	3.0	6.0	2.0	*	*	*	1.0	1.6	4.0	10.0	32.1
1973	2.0	1.0	2.0	9.0	7.0	4.0	1.0	10.0	8.0	3.0	4.0	12.0	63.0
1974	0.5	0.6	1.0	0.8	5.0	7.1	0.6	1.5	3.0	3.5	2.5	7.0	33.1
1975	3.0	5.0	25.0	4.0	7.4	1.1	1.9	1.5	1.5	5.0	8.0	7.0	70.4
1976	0.4	3.0	12.0	1.5	1.0	24.0	21.0	10.0	4.0	6.0	5.0	13.5	101.4
1977	5.2	6.4	10.5	5.0	11.1	*	*	20.0	18.0	9.3	10.0	4.4	99.9
1978	4.8	9.3	6.3	8.9	16.9	23.0	30.0	45.0	4.0	9.7	12.5	11.4	181.8
1979	2.2	8.2	35.0	4.0	16.8	15.0	15.0	8.0	15.0	5.0	2.5	4.0	130.7
1980	1.1	4.0	23.0	4.2	10.9	10.0	13.0	8.0	15.0	8.0	4.2	9.3	110.7
1981	4.8	11.5	12.5	4.1	17.5	11.0	6.0	30.0	10.0	10.0	9.0	9.0	135.4
1982	2.5	8.5	2.8	1.7	8.7	25.0	18.0	25.0	10.0	9.0	7.0	12.8	131.0
1983	1.9	5.3	4.0	4.5	36.2	25.0	25.0	48.0	5.5	7.7	8.3	12.0	183.4
1984	2.1	8.6	3.5	2.7	25.6	19.0	12.0	21.0	8.0	7.0	6.5	9.8	125.8
1985	0.5	4.9	2.5	1.0	9.1	6.0	4.5	9.5	2.0	3.0	3.0	5.0	51.0
1986	0.6	2.5	2.0	1.7	8.6	24.0	17.0	22.0	2.0	11.0	11.0	5.9	108.3
23 Year													
Total	37.5	134.8	175.1	111.1	224.3	224.2	165.5	349.5	108.0	98.8	112.1	162.8	1,903.7
Avg.	2.0	6.1	8.3	4.8	9.8	14.9	11.8	23.3	6.8	6.6	6.2	8.6	82.8
Escap.													
Goal	4.0-5.0	10-15	20-40	4.0-5.0	10-15	20-50	20-30	20-50	5-10	8-12	10-15	10-15	141-262

* No surveys conducted due to numerous factors: i.e. weather, money.

1/ Most of these estimated escapements are either peak counts from aerial surveys or adjusted figures from aerial surveys based on survey conditions and time of surveys.

Appendix Table 7. Estimated sockeye salmon escapements in thousands of fish in major spawning systems in Lower Cook Inlet. 1/

Year	English Bay	Anderson Beach	Delight Lake	Desire Lake	Bear Lake	Aialik Lake	Mikfik Lake	Chenik Lake	Amakde. Creek	Kamishak River	Douglas River	Douglas Beach	Total
1959	5.0		5.0	-	-	-	1.0	-	-				11.0
1960	16.0		1.0	4.0	9.3	-	-	0.8	1.5		0.4		33.0
1961	10.0	1.0	10.0	10.0	3.0	10.0	3.0	0.1	2.5		-		49.6
1962	2.0	0.2	5.0	4.0	3.6	16.0	2.6	1.5	2.5		2.5		39.9
1963	10.0		8.0	1.4	8.9	20.0	0.2	0.3	7.0				55.8
1964	-		0.3	10.0	4.7	2.0	-	-	-				17.0
1965	3.0		-	-	3.8	-	-	-	-				6.8
1966	3.0		4.3	9.0	1.9	4.0	-	0.2	2.0				24.4
1967	6.0		-	0.3	3.3	-	-	2.5	0.2				12.3
1968	-		-	0.3	59.0	-	0.7	-	-				60.0
1969	5.0		-	8.0	21.2	-	-	-	1.5				35.7
1970	8.0		4.6	2.0	5.8	-	1.0	-	0.3				21.7
1971	6.5		5.0	5.0	0.4	3.0	5.0	2.0	1.2				28.1
1972	14.5		10.0	8.0	0.7	0.6	13.0	0.7	1.0				48.5
1973	4.4		2.5	5.2	0.2	1.5	2.7	0.3	2.2				19.0
1974	-		-	-	0.1	2.2	0.9	0.1	0.4				3.7
1975	2.5		2.0	6.5	+	8.0	6.0	0.1	0.8				25.9
1976	6.0		6.0	11.0	0.6	8.0	10.0	0.9	1.6		0.2	0.1	44.4
1977	12.5		5.2	10.7	+	5.0	9.8	0.2	2.6		2.6	0.4	49.0
1978	13.5	0.6	8.0	10.0	+	3.0	12.0	0.1	2.6	1.0	-	0.1	47.4
1979	4.4		8.0	12.0	+	5.0	6.0	+	1.0	0.4	-	0.3	37.1
1980	12.0	0.3	10.0	17.0	1.5	6.6	6.5	3.5	2.6	0.1	0.4	0.5	61.0
1981	10.5		7.3	12.0	0.7	1.8	5.3	2.5	1.9	0.8	0.2	0.3	43.3
1982	20.0	0.6	25.0	18.0	0.5	22.4	35.0	8.0	3.2	10.0	4.2	1.6	148.5
1983	12.0	0.5	7.0	12.0	0.7	20.0	7.0	11.0	1.2	5.0	0.5	0.4	77.3
1984	11.1	1.2	10.5	15.0	0.5	22.0	6.0	13.0	1.4	2.5	0	0.1	83.3
1985	5.0	0.1	26.0	18.0	1.1	8.0	20.0	3.5	0.9	0.8	+	+	83.4
1986	2.8	0.9	13.0	10.0	0.8	7.6	7.8	7.0	1.9	5.0	0.2	0.2	57.2
Total	205.7	5.4	183.7	219.4	132.3	176.7	161.5	58.3	44.0	25.6	11.2	4.0	1,224.3
Ave.	8.2	0.6	8.0	8.8	4.9	8.4	7.3	2.7	1.8	2.8	1.0	0.4	43.7
Esc.Goal10-20		2.0	10.0	10.0	0.5-1.0	2.5-5.0	5.0	10.0	1.0	+	+	+	51-64

* No escapement goal set.

1/ Most escapements are estimated from peak aerial survey counts or are adjusted figures from aerial surveys based on weather conditions.

2/ Limited by Bear Lake Management Plan since 1971.

Appendix Table 8. Summary of return per spawner and forecast variations which have occurred in the pink salmon runs to the Southern and Outer districts of Cook Inlet, 1964-1984.

Brood Year	Escapement	Return	Return/Spawner	Forecast	Variation from Forecast
1964	269.9	828	3.07	1,300	- 36.3
1965	142.3	478	3.36	500	- 4.4
1966	252.0	542	2.15	462	+ 17.3
1967	122.5	238	1.94	500	- 52.4
1968	196.3	699	3.56	2,000	- 65.0
1969	113.2	615	5.34	640	- 3.9
1972	43.9	91	2.07	340	- 73.5
1973	111.3	1,298	11.66	620	+ 109.4
1974	40.2	197	4.90	780	- 74.9
1975	240.8	1,652	6.86	845	+ 102.0
1976	86.6	488	3.90 2/	635	- 24.0
1977	361.3	3,507	8.67 2/	1,647 3/	+ 112.9
1978	147.3	899	3.96 2/	1,295 3/	- 30.6
1979	574.7	3,706	4.68 2/	2,992 3/	+ 23.9
1980	266.3	532	1.13 2/	1,053 3/	- 49.6
1981	409.2	1,106	1.13 2/	2,724 3/	- 59.4
1982 1/	168.3	595	1.78 2/	1,096 3/	- 45.7
1983 1/	261.9	1,480	3.64 2/	1,217 3/	+ 21.6
1984 1/	214.3	1,171	3.41 2/	2,097 3/	- 44.2
Total	4,024.3	20,122	78.23	22,743	
Average	211.8	1,059	4.12	1,197	- 11.53

1/ Preliminary data.

2/ Calculated by subtracting hatchery return from total

return: 150,000 in 1978

370,000 in 1979

315,000 in 1980

1,019,000 in 1981

232,000 in 1982

645,000 in 1983

285,000 in 1984

528,000 in 1985

441,000 in 1986

3/ Includes projected hatchery return.

Appendix Table 9. Pink salmon catch in thousands of fish for fishing districts in Lower Cook Inlet, 1936- 1986. 1/

Year	Catch	Year	Catch	Year	Catch
1936	526	1956	208	1976	136
1937	457	1957	286	1977	1,292
1938	345	1958	950	1978	353
1939	292	1959	124	1979	2,987
1940	1,659	1960	612	1980	890
1941	692	1961	303	1981	3,276
1942	695	1962	2,248	1982	552
1943	1,361	1963	204	1983	927
1944	1,446	1964	1,055	1984 2/	698
1945	1,302	1965	116	1985	1,230
1946	870	1966	579	1986	1,408
1947	1,396	1967	375		
1948	591	1968	585		
1949	366	1969	202		
1950	311	1970	574		
1951	378	1971	393		
1952	972	1972	29		
1953	513	1973	307		
1954	271	1974	51		
1955	1,184	1975	1,063		
		Total		Average	
51 Year		38,713		759	
Odd-Year (25)		21,026		841	
Even-Year (26)		18,614		716	

1/ Data source: 1953-63 data very sketchy - U.S.F. & W.S. Statistical Digest #50 and INPFC Document #1134, Rich & Ball; ADF&G computer runs, 1960-1986.

2/ Preliminary data.

Appendix Table 10. Pink salmon catch for Lower Cook Inlet in thousands of fish by bay during odd numbered years. 1/

Catch Location	1959	1961	1963	1965	1967	1969	1971	1973	1975
Humpy Creek	13.2	67.9	57.4	13.8	40.4	0.6	11.4	44.3	339.4
Tutka Bay	14.4	106.8	37.7	44.6	31.6	32.4	10.3	20.0	89.2
Seldovia Bay	4.9	15.1	1.6	19.2	11.7	28.7	27.3	19.4	429.6
Port Graham Bay	5.3	1.0	2.7	12.4	5.1	2.0	1.0	13.9	18.3
Dogfish Bay	1.6	0	0	0.1	2.3	0	10.4	0.3	0
Port Chatham	1.2	0	0.8	0	0	0	26.3	12.0	16.0
Windy Bay	3.1	2.2	0	5.4	0	0	57.3	68.5	18.1
Rocky Bay	2.3	0	1.4	0.1	0	0	0.1	0.2	0
Port Dick Bay	28.2	92.9	19.0	15.3	259.9	51.5	94.6	96.6	90.3
Nuka Bay	33.3	2.0	0.3	0	0.1	0	119.7	8.1	35.4
Resurrection Bay	8.4	0	0	0	1.2	0	0	0	0
Bruin Bay	0	0	12.3	0.9	2.1	0	11.7	0	0
Rocky-Ursus Coves	3.7	2.7	44.2	0	13.0	52.8	16.4	7.9	0
Iniskin and Cottonwood Bays	1.5	3.3	21.8	0	0.1	26.0	0	4.7	0
Miscellaneous	3.6	9.5	4.4	3.8	8.0	8.4	6.4	11.5	27.1
Total	124.7	303.4	203.6	115.6	375.5	202.4	392.9	307.4	1,063.4

Catch Location	1977	1979	1981	1983	1985
Humpy Creek	26.9	298.0	250.9	26.9	11.4
Tutka Bay	21.9	411.3	1,023.5	615.5	491.2
Seldovia Bay	47.6	140.8	126.4	43.1	3.8
Port Graham Bay	44.8	124.7	45.9	4.1	12.5
Dogfish Bay	5.0	7.4	22.9	0.2	0
Port Chatham	1.4	174.4	47.6	3.0	7.0
Windy Bay	173.2	551.4	82.9	0	4.8
Rocky Bay	11.6	122.2	16.5	1.3	0
Port Dick Bay	880.3	962.9	1,140.9	138.6	453.6
Nuka Bay	56.3	121.7	395.1	56.4	150.8
Resurrection Bay	0	0	32.6	27.1	74.6
Bruin Bay	6.2	40.3	51.9	0.3	0
Rocky-Ursus Cove	0	14.4	14.1	0	0
Iniskin and Cottonwood Bays	0.1	0.2	0	0.3	0
Miscellaneous	16.9	16.8	25.0	10.7	18.0
Total	1,292.2	2,986.5	3,276.2	927.5	1,229.7

1/ Data source IBM computer runs, 1959-83.

2/ Preliminary data.

Appendix Table 11. Pink salmon catch for Lower Cook Inlet in thousands of fish by bay during even numbered years. 1/

Catch Location	1960	1962	1964	1966	1968	1970	1972	1974
Humpy Creek	71.6	108.8	82.4	40.7	43.9	114.1	2.1	35.4
Tutka Bay	87.6	279.5	100.9	53.5	26.9	43.9	5.2	5.5
Seldovia Bay	42.6	142.8	37.4	44.1	23.6	28.6	0.2	3.5
Port Graham Bay	7.1	18.1	38.4	5.1	23.0	12.5	1.1	4.5
Dogfish Bay	1.8	1.4	0.1	7.1	0	9.8	0.3	0
Port Chatham	15.7	102.2	67.1	6.7	10.0	1.9	0	0
Windy Bay	29.2	85.5	68.6	20.1	3.4	0.8	0	0
Rocky Bay	17.0	225.9	53.2	0	10.8	39.8	0	0
Port Dick Bay	257.4	1,118.3	526.3	296.8	55.0	193.8	0	0.6
Nuka Bay	26.6	129.8	23.8	0	90.2	48.4	0.3	0.7
Resurrection Bay	5.8	0.1	0.3	0	37.4	40.2	18.2	0
Bruin Bay	2.6	0	0	0	126.2	10.2	0	0
Rocky-Ursus Coves	6.6	3.2	13.5	2.9	18.0	7.5	0	0
Iniskin and Cottonwood Bays	2.1	3.2	4.3	0	9.9	3.5	0	0
Miscellaneous	37.9	29.5	39.1	102.2	107.1	19.3	1.3	0.4
Total	611.6	2,248.3	1,055.4	579.2	585.4	574.3	28.7	50.6

Catch Location	1976	1978	1980	1982	1984	1986
Humpy Creek	73.1	44.0	53.3	6.0	40.8	116.7
Tutka Bay	18.0	167.9	312.5	184.9	236.0	400.2
Seldovia Bay	3.0	35.4	81.7	70.3	0.2	2.8
Port Graham Bay	3.9	4.0	30.5	35.4	0.3	8.8
Dogfish Bay	0	0	4.7	1.7	1.4	0
Port Chatham	0	0	1.8	12.3	0	0
Windy Bay	0	0	0	0	0	0
Rocky Bay	0	0	1.4	0	0	0
Port Dick Bay	0	63.6	133.3	43.9	69.6	304.0
Nuka Bay	0.1	6.3	12.8	9.3	0.7	97.8
Resurrection Bay	35.4	29.7	155.8	137.4	118.5	38.7
Bruin Bay	0	0	99.4	13.3	123.3	349.7
Rocky-Ursus Coves	0	0.1	0	20.0	17.6	71.1
Iniskin and Cottonwood Bays	0.1	0.1	0.1	0.6	0.1	0.2
Miscellaneous	2.8	1.5	2.4	16.4	89.7	18.3
Total	136.4	352.6	889.7	551.5	698.3	1,408.3

1/ Data resource IBM computer runs, 1960-86.

2/ Preliminary data.

Appendix Table 12. Chum salmon catch for Lower Cook Inlet in thousands of fish by bay by year. 1/

Catch Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Tutka	0.1	2.4	1.8	2.9	2.4	5.6	1.1	3.9	4.0	1.3	0.7	1.6
Port Graham	2.3	1.8	0.5	4.0	3.8	2.1	0.9	5.3	3.0	2.3	1.3	4.8
Dogfish	4.9	0.4	0.1	0	0.2	0	0	7.0	15.3	0.1	0	50.9
Port Chatham	1.0	2.5	0	2.8	4.3	5.2	0	17.8	0	1.0	0	0.1
Rocky-Windy	14.9	6.4	2.2	8.5	0.3	33.8	8.1	1.7	0	0.5	0	39.4
Port Dick	42.4	53.9	36.8	112.0	110.8	227.4	14.2	60.9	36.0	10.9	5.4	21.8
Nuka	1.7	8.4	1.7	0.5	1.5	0	0	0	1.5	6.9	0	5.9
Resurrection	0.1	0.5	0	0	0	0	0	0	0.1	0.7	0	0.4
Douglas River	0.2	0	0	0	0	0	0	0	0	0	0	0
Kamishak River	0	0	0	0	0	0	0	0	0	3.7	0	0
McNeil River	0	0.4	0	0	0	2.7	0.9	0	0.4	8.3	4.4	1.9
Bruin	0	0.3	0.5	0	0.1	0	0.4	0	1.0	7.5	0	12.8
Ursus-Rocky Coves	8.5	8.6	1.8	1.1	2.8	1.2	0	4.0	2.9	1.0	3.6	8.9
Cottonwood and Iniskin	12.1	35.4	10.2	41.7	10.9	38.4	0	0	19.0	25.5	44.4	71.9
Miscellaneous	23.7	0	0	5.8	1.4	6.9	2.5	28.5	2.2	5.4	1.4	3.6
Total	110.8	116.1	55.6	179.3	138.5	323.3	28.1	129.1	85.4	75.1	61.2	224.2

Catch Location	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Tutka	0.5	1.3	0.8	1.4	2.0	0.9	0.8	2.6	4.9	1.8	10.8	8.3
Port Graham	2.0	3.2	2.6	1.0	2.2	0.5	5.0	2.4	4.3	2.5	11.2	7.4
Dogfish	114.5	41.1	0.4	0	0	0	9.4	0	8.4	2.1	71.8	15.6
Port Chatham	2.4	0	0.2	0	0.6	0	0.1	0	1.7	1.3	59.5	14.1
Rocky-Windy	1.4	0	0.9	0	0.3	0	17.7	0	76.7	2.1	7.4	0
Port Dick	0.7	0	33.4	8.1	6.8	0	25.6	9.1	79.0	19.0	95.8	30.3
Nuka	0.1	2.3	40.8	3.9	3.6	0.4	17.4	0.4	14.7	7.8	3.8	0.9
Resurrection	0.4	0.7	0	0	0	0	0	0.1	0	0.7	3.3	7.7
Douglas River	0	0	0	0	0.1	7.1	4.0	2.9	0.7	10.0	46.7	37.1
Kamishak River	0	2.4	0	0	0	10.5	0	23.9	17.8	0	8.6	9.2
McNeil River	0	2.3	0	2.0	0	16.9	38.5	4.9	6.5	6.3	11.6	32.6
Bruin	1.6	1.8	0	0.7	0	0	0	0	4.0	10.6	1.7	1.3
Ursus-Rocky Coves	10.3	0.2	5.7	0	2.0	2.8	7.8	1.9	0.5	0.3	1.5	7.2
Cottonwood and Iniskin	14.5	19.7	29.9	0	2.8	11.5	15.3	14.9	0.2	5.4	3.5	21.6
Miscellaneous	0.2	0.5	0.8	2.1	1.2	0.2	4.2	10.4	3.6	3.6	1.9	5.8
Total	148.6	75.5	115.5	19.2	21.6	50.8	145.8	73.5	223.0	73.5	339.1	198.0

Appendix Table 12. (Continued)

Catch Location	1983	1984 2/	1985	1986
Tutka	9.8	2.0	3.2	3.9
Port Graham	1.7	0.3	1.3	0.8
Dogfish	2.8	2.6	0	0
Port Chatham	2.1	0	1.3	0
Rocky-Windy	3.2	0	0	0
Port Dick	18.0	1.0	9.6	10.4
Nuka	1.1	0.6	0.8	1.3
Resurrection	6.9	3.1	3.0	3.8
Douglas River	27.2	17.6	8.0	11.6
Kamishak River	23.9	6.0	0.1	0.1
McNeil River	67.9	11.5	0	13.7
Bruin	2.6	10.9	0	5.4
Ursus-Rocky				
Coves	0	3.8	0	22.1
Cottonwood and				
Iniskin	21.4	20.2	0	8.8
Miscellaneous	3.7	14.2	3.3	0.8
Total	192.3	93.8	30.6	82.7

1/ Data source IBM computer runs, 1959-86.

2/ Preliminary data.

Appendix Table 13. Sockeye salmon catch for Lower Cook Inlet in thousands of fish by bay by year. 1/

Catch Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Resurr. Bay	0	0.1	0	0	0	0	0	0	0	74.5	99.4	1.7
Aialik Bay	1.3	0.2	4.3	2.6	0.5	0	0	0	0	0	0	3.1
Nuka Bay	8.3	6.7	8.2	5.1	0.5	0	2.0	0	2.2	1.5	0	1.0
Humpy Creek	1.3	1.4	0.8	2.0	1.1	0.7	1.4	1.5	1.9	2.7	1.6	1.3
Tutka Bay	1.1	1.7	3.0	5.2	2.9	9.0	5.2	6.0	11.8	6.3	4.9	6.0
Seldovia Bay	0.4	1.2	1.2	1.7	1.2	2.1	0.9	1.0	2.2	1.9	0.8	1.2
Port Graham Bay	6.6	7.8	5.2	6.8	7.8	5.5	3.5	2.7	10.4	7.7	4.3	3.7
Kamishak-Douglas	0	0	0	0	0	0	0	0	0	0	0	0
Mikfik Creek	0	0.7	0	0	0	1.9	0.2	0	0	0	8.9	2.8
Chenik Creek	0	0	0	0	0	0	0	0	0.2	0	0.9	0
Miscellaneous	2.6	4.9	1.0	1.9	1.1	1.5	2.6	4.1	3.0	0.6	11.9	1.5
Total	21.6	24.7	22.8	25.3	15.1	20.7	14.0	15.3	29.0	95.2	122.8	22.3

Catch Location	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Resurr. Bay	2.2	0.1	0	0	0	0	0	0	0	0	0.6	0
Aialik Bay	0	0.3	3.1	0.2	0.6	0	5.8	0	0	0.1	8.7	3.0
Nuka Bay	1.6	26.1	1.5	0.2	0	18.9	32.5	10.7	24.4	21.5	17.2	66.3
Humpy Creek	1.3	3.7	2.1	3.0	3.5	5.4	3.8	12.9	6.2	11.5	11.3	1.2
Tutka Bay	10.0	14.8	8.1	10.8	12.6	14.2	21.0	92.1	15.6	13.2	40.9	15.8
Seldovia Bay	1.5	2.3	2.2	2.3	2.1	2.1	3.0	5.6	2.6	1.6	5.3	5.0
Port Graham Bay	15.6	10.5	11.7	10.9	9.2	13.6	26.6	30.5	12.9	16.5	20.3	21.5
Kamishak-Douglas	0	0	0	0	0	0.2	5.3	4.6	0.5	0	4.1	0
Mikfik Creek	0	0	0	0	0	3.8	2.1	0	1.2	3.9	0.8	17.8
Chenik Creek	0	0	0	0	0	0	0	0	0	0	0	0.3
Miscellaneous	0	1.0	5.0	0	1.0	0	0	0	9.1	1.1	1.1	0.4
Total	22.2	57.9	29.2	27.4	28.1	58.2	100.1	156.4	64.4	69.4	110.3	131.3

Catch Location	1983	1984 2/	1985 2/	1986 2/
Resurr. Bay	0	3.4	0.3	0
Aialik Bay	25.9	50.4	24.1	3.0
Nuka Bay	16.8	28.4	91.8	48.4
Humpy Creek	77.7	104.4	63.2	15.3
Tutka Bay	35.8	9.5	14.9	16.3
Seldovia Bay	6.7	0	2.6	3.2
Port Graham Bay	13.4	0	3.5	2.0
Kamishak-Douglas	2.8	6.8	0.7	7.6
Mikfik Creek	5.8	3.9	67.0	27.5
Chenik Creek	2.7	13.9	10.6	111.3
Miscellaneous	0	50.1	0	0.3
Total	187.6	270.8	278.7	234.9

1/ Data source IBM computer runs, 1959-86.

2/ Preliminary data.

Appendix Table 14. Salmon catch by species for set gillnets in the Southern District of Lower Cook Inlet, 1958-1986. 1/

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1958	42	3,872	165	2,293	2,274	8,646
1959	49	6,148	377	4,342	361	11,277
1960	6	7,007	398	3,894	347	11,652
1961	15	8,631	216	8,201	425	17,488
1962	13	11,793	1,281	12,207	1,558	26,852
1963	9	8,305	314	1,490	812	10,930
1964	5	16,632	1,576	25,935	1,972	46,120
1965	9	10,998	314	7,267	679	19,267
1966	31	10,317	505	24,981	1,790	37,624
1967	112	22,097	504	13,962	1,929	38,604
1968	31	15,741	1,431	12,614	1,289	31,106
1969	33	11,570	246	10,717	1,298	23,864
1970	26	11,455	1,154	18,512	1,575	32,722
1971	41	18,398	1,449	8,564	1,352	29,804
1972	69	31,340	323	6,303	2,819	40,854
1973	134	23,970	1,089	20,222	2,374	47,789
1974	175	26,966	3,010	11,097	2,713	43,991
1975	96	26,588	2,337	49,490	4,020	82,531
1976	176	33,993	1,321	13,431	1,353	50,274
1977	175	54,404	869	38,064	2,765	96,277
1978	1,052	86,934	3,053	11,556	4,117	106,712
1979	483	34,367	7,595	69,368	5,266	117,079
1980	225	29,922	8,038	26,613	2,576	67,374
1981	222	53,665	6,735	68,794	8,524	137,940
1982	894	42,389	5,557	15,838	7,113	71,791
1983	822	41,707	1,955	20,377	4,377	69,238
1984 2/	643	45,806	2,979	20,764	5,412	75,604
1985	958	23,188	3,908	22,876	4,217	55,147
1986 2/	745	21,807	2,827	14,244	2,426	42,049
29 Year Total	7,291	740,040	61,526	564,016	77,733	1,450,606
29 Year Average	251	25,519	2,122	19,449	2,680	50,021
% of Total	0.50	51.02	4.24	38.88	5.36	100.00

1/ Data source: final IBM computer runs 1958-1986.

2/ Preliminary data.

Appendix Table 15. Lower Cook Inlet total salmon catch by district, 1957-1986. 1/

Year	Southern	Outer	Kamishak	Eastern	Total
1957	209,138	290,473	21,125	428	521,164
1958	253,457	841,957	0	200	1,095,614
1959	72,711	137,211	30,491	23,294	263,707
1960	227,577	460,754	56,698	10,145	755,174
1961	206,075	158,832	18,499	0	383,406
1962	591,850	1,821,382	43,654	3,787	2,460,673
1963	124,593	140,915	96,309	2,262	364,079
1964	304,213	1,038,790	65,098	856	1,408,957
1965	104,646	46,345	7,557	0	158,548
1966	223,357	489,849	15,902	0	729,108
1967	145,110	302,028	41,818	3,923	492,879
1968	181,884	213,746	248,307	116,827	760,764
1969	86,475	57,036	144,166	99,423	387,130
1970	233,564	426,002	122,826	43,329	825,721
1971	74,518	431,520	58,545	3,758	568,341
1972	46,759	70,942	26,794	19,930	164,425
1973	126,687	278,695	48,181	808	454,371
1974	81,865	14,037	7,517	517	103,936
1975	929,711	172,368	17,370	125	1,119,574
1976	138,961	19,398	55,060	35,673	249,092
1977	219,503	1,233,262	79,498	10,714	1,542,977
1978	404,203	100,280	55,854	30,422	590,759
1979	1,044,517	2,151,556	91,098	296	3,287,467
1980	537,535	208,827	144,157	157,047	1,047,566
1981	1,561,782	1,971,187	146,416	58,008	3,737,393
1982	366,546	197,335	209,527	155,379	928,787
1983	842,497	243,900	162,652	70,614	1,319,663
1984 2/	513,703	120,649	245,602	200,866	1,080,820
1985	613,821	725,252	88,613	122,733	1,550,419
1986 2/	588,790	466,986	641,889	47,825	1,745,490

30 Year					
Total	11,056,048	14,831,514	2,991,253	1,219,189	30,098,004
30 Year					
Average	368,535	494,384	99,708	40,640	1,003,267
% of					
Total	36.73	49.28	9.94	4.05	100.00

1/ Data source: Final IBM computer runs, 1957-1986 and processor catch reports.

2/ Preliminary data.

Appendix Table 16. Southern district salmon catch by species, 1957-1986. 1/

Year	King	Sockeye	Coho	Pink	Chum	Total
1957	286	19,431	1,507	130,511	57,403	209,138
1958	119	17,731	1,713	209,798	24,096	253,457
1959	71	7,720	709	50,244	13,967	72,711
1960	12	12,239	1,237	209,989	4,100	227,577
1961	39	10,104	1,149	191,867	2,916	206,075
1962	58	16,569	2,095	564,050	9,078	591,850
1963	88	13,142	4,020	99,820	7,523	124,593
1964	84	17,283	8,905	266,412	11,529	304,213
1965	10	11,185	733	90,260	2,458	104,646
1966	60	12,192	4,807	177,544	28,754	223,357
1967	173	26,349	2,379	92,793	23,416	145,110
1968	61	18,716	4,671	154,033	4,403	181,884
1969	59	12,578	485	70,753	2,600	86,475
1970	91	13,480	3,705	208,114	8,174	233,564
1971	41	18,403	3,151	50,066	2,857	74,518
1972	69	31,345	1,283	9,126	4,936	46,759
1973	139	24,145	1,241	97,574	3,588	126,687
1974	182	27,029	3,054	48,875	2,725	81,865
1975	142	27,393	3,039	893,709	5,428	929,711
1976	442	35,280	1,905	99,817	1,517	138,961
1977	182	54,663	1,239	156,696	6,723	219,503
1978	1,511	141,088	4,318	251,761	5,525	404,203
1979	1,199	37,342	10,688	982,529	12,759	1,044,517
1980	414	42,929	11,568	478,019	4,605	537,535
1981	1,024	77,880	7,976	1,451,022	23,880	1,561,782
1982	926	43,433	7,165	296,556	18,466	366,546
1983	858	133,671	3,589	690,098	14,281	842,497
1984 2/	661	163,244	3,415	336,785	9,598	513,703
1985	1,007	84,149	4,258	518,898	5,509	613,821
1986 2/	776	36,838	3,095	542,521	5,560	588,790
30 Year						
Total	10,784	1,187,551	109,099	9,420,240	328,374	11,056,048
30 Year						
Average	359	39,585	3,637	314,008	10,946	368,535
% of						
Total	0.10	10.74	0.99	85.20	2.97	100.00

1/ Data source: Final IBM computer runs, 1957-1986, and processor catch reports.

2/ Preliminary data.

Appendix Table 17. Outer district salmon catch by species,
1957-1986. 1/

Year	King	Sockeye	Coho	Pink	Chum	Total
1957	13	2,982	110	149,197	138,171	290,473
1958	1	1,719	83	739,768	100,386	841,957
1959	3	8,049	109	69,054	59,996	137,211
1960	4	11,614	574	381,375	67,187	460,754
1961	2	12,671	456	105,491	40,212	158,832
1962	2	8,697	1,893	1,684,023	126,767	1,821,382
1963	6	1,974	369	21,471	117,095	140,915
1964	2	1,370	431	767,473	269,514	1,038,790
1965	0	2,009	7	21,886	22,443	46,345
1966	1	3,120	357	398,751	87,620	489,849
1967	2	2,165	70	262,258	37,533	302,028
1968	1	1,550	106	191,691	20,398	213,746
1969	0	92	11	51,533	5,400	57,036
1970	5	4,177	243	302,831	118,746	426,002
1971	11	1,630	174	310,710	118,995	431,520
1972	7	26,423	17	1,005	43,490	70,942
1973	1	5,063	31	197,259	76,341	278,695
1974	1	399	28	1,678	11,931	14,037
1975	0	720	7	160,291	11,350	172,368
1976	7	18,886	0	93	412	19,398
1977	34	33,733	1,528	1,127,800	70,167	1,233,262
1978	236	10,695	45	70,080	19,224	100,280
1979	30	25,297	150	1,945,521	180,558	2,151,556
1980	10	22,514	16	154,041	32,246	208,827
1981	61	18,133	485	1,714,115	238,393	1,971,187
1982	129	66,781	92	67,456	62,877	197,335
1983	14	16,835	54	199,794	27,203	243,900
1984 2/	3	28,411	90	89,068	3,077	120,649
1985	19	91,957	3,210	618,222	11,844	725,252
1986 2/	6	48,472	5,052	401,755	11,701	466,986
30 Year						
Total	611	478,138	15,798	12,205,690	2,131,277	14,831,514
30 Year						
Average	20	15,938	527	406,856	71,043	494,384
% of						
Total	0.00	3.22	0.11	82.30	14.37	100.00

1/ Data source: Final IBM computer runs, 1957-1986, and processor catch reports.

2/ Preliminary data.

Appendix Table 18. Kamishak Bay district salmon catch by species, 1957-1986. 1/

Year	King	Sockeye	Coho	Pink	Chum	Total
1957	0	4,335	29	5,905	10,856	21,125
1958	0	0	0	0	0	0
1959	0	1,549	43	5,325	23,574	30,491
1960	11	768	28	11,563	44,328	56,698
1961	0	1	14	6,019	12,465	18,499
1962	0	20	11	219	43,404	43,654
1963	2	4	97	82,314	13,892	96,309
1964	5	1,979	115	20,719	42,280	65,098
1965	0	808	122	3,452	3,175	7,557
1966	1	21	247	2,945	12,688	15,902
1967	1	182	74	17,340	24,221	41,818
1968	0	492	101	198,253	49,461	248,307
1969	2	10,723	121	80,157	53,193	144,196
1970	0	2,888	220	23,113	96,605	122,826
1971	0	3	121	32,094	26,327	58,545
1972	0	47	31	342	26,374	26,794
1973	0	1	28	12,568	35,584	48,181
1974	0	0	2,915	48	4,554	7,517
1975	0	29	3,041	9,432	4,868	17,370
1976	1	3,988	1,111	1,112	48,848	55,060
1977	1	7,425	105	6,308	65,659	79,498
1978	0	4,619	1,584	982	48,669	55,854
1979	9	1,778	1,116	58,484	29,711	91,098
1980	0	3,877	2,495	101,864	35,921	144,157
1981	1	4,972	1,845	66,097	73,501	146,416
1982	11	18,014	38,685	43,871	108,946	209,527
1983	1	11,207	7,138	1,405	142,901	162,652
1984 2/	2	24,642	13,230	137,133	70,595	245,602
1985	6	78,250	2,024	194	8,139	88,613
1986 2/	14	146,496	9,935	423,774	61,670	641,889
30 Year						
Total	68	329,118	86,626	1,353,032	1,222,409	2,991,253
30 Year						
Average	2	10,971	2,888	45,101	40,747	99,708
% of						
Total	0.00	11.00	2.90	45.23	40.87	100.00

1/ Data source: Final IBM computer runs, 1957-1986, and processor catch reports.

2/ Preliminary data.

Appendix Table 19. Eastern district salmon catch by species, 1957-1986. 1/

Year	King	Sockeye	Coho	Pink	Chum	Total
1957	120	169	119	0	20	428
1958	0	0	0	200	0	200
1959	58	4,319	5,491	125	13,301	23,294
1960	0	105	853	8,720	467	10,145
1961	0	0	0	0	0	0
1962	0	0	3,728	49	10	3,787
1963	0	1	2,250	11	0	2,262
1964	0	22	9	813	12	856
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	348	203	3,097	275	3,923
1968	2	74,484	5	41,464	872	116,827
1969	3	99,403	6	1	10	99,423
1970	11	1,767	692	40,226	633	43,329
1971	21	2,198	1,115	1	423	3,758
1972	12	82	903	18,190	743	19,930
1973	5	0	801	2	0	808
1974	0	0	517	0	0	517
1975	1	0	124	0	0	125
1976	0	5	200	35,423	45	35,673
1977	0	5,776	360	1,349	3,229	10,714
1978	0	2	582	29,738	100	30,422
1979	0	0	296	0	0	296
1980	0	122	426	155,779	720	157,047
1981	0	9,270	472	44,987	3,279	58,008
1982	0	3,092	950	143,639	7,698	155,379
1983	0	25,932	594	36,154	7,934	70,614
1984 2/	47	54,459	536	135,290	10,534	200,866
1985	11	24,338	835	92,403	5,146	122,733
1986 2/	0	3,055	770	40,243	3,757	47,825
30 Year						
Total	291	308,949	22,837	827,904	59,208	1,219,189
30 Year						
Average	10	10,298	761	27,597	1,974	40,640
% of						
Total	0.02	25.34	1.87	67.91	4.86	100.00

1/ Data source: Final IBM computer runs, 1957-1986, and processor catch reports.

2/ Preliminary data.

Appendix Table 20. King salmon catch by district for Lower Cook Inlet, 1957-1986. 1/

Year	Southern	Outer	Kamishak	Eastern	Total
1957	286	13	0	120	419
1958	119	1	0	0	120
1959	71	3	0	58	132
1960	12	4	11	0	27
1961	39	2	0	0	41
1962	58	2	0	0	60
1963	88	6	2	0	96
1964	84	2	5	0	91
1965	10	0	0	0	10
1966	60	1	1	0	62
1967	173	2	1	0	176
1968	61	1	0	2	64
1969	59	0	2	3	64
1970	91	5	0	11	107
1971	41	11	0	21	73
1972	69	7	0	12	88
1973	139	1	0	5	145
1974	182	1	0	0	183
1975	142	0	0	1	143
1976	442	7	1	0	450
1977	182	34	1	0	217
1978	1,511	236	0	0	1,747
1979	1,199	30	9	0	1,238
1980	414	10	0	0	424
1981	1,024	61	1	0	1,086
1982	926	129	11	0	1,066
1983	858	14	1	0	873
1984 2/	661	3	2	47	713
1985	1,007	19	6	11	1,043
1986 2/	776	6	14	0	794
30 Year Total	10,784	611	68	291	11,752
30 Year Average	359	20	2	10	392
% of Total	91.76	5.20	0.58	2.48	100.00

1/ Data source: Final IBM computer runs, 1957-1986 and processor catch reports.

2/ Preliminary data.

Appendix Table 21. Sockeye salmon catch by district for Lower Cook Inlet, 1957-1986. 1/

Year	Southern	Outer	Kamishak	Eastern	Total
1957	19,431	2,982	4,335	169	26,917
1958	17,731	1,719	0	0	19,450
1959	7,720	8,049	1,549	4,319	21,637
1960	12,239	11,614	768	105	24,726
1961	10,104	12,671	1	0	22,776
1962	16,569	8,697	20	0	25,286
1963	13,142	1,974	4	1	15,121
1964	17,283	1,370	1,979	22	20,654
1965	11,185	2,009	808	0	14,002
1966	12,192	3,120	21	0	15,333
1967	26,349	2,165	182	348	29,044
1968	18,716	1,550	492	74,484	95,242
1969	12,578	92	10,723	99,403	122,796
1970	13,480	4,177	2,888	1,767	22,312
1971	18,403	1,630	3	2,198	22,234
1972	31,345	26,423	47	82	57,897
1973	24,145	5,063	1	0	29,209
1974	27,029	399	0	0	27,428
1975	27,393	720	29	0	28,142
1976	35,280	18,886	3,988	5	58,159
1977	54,663	33,733	7,425	5,776	101,597
1978	141,088	10,695	4,619	2	156,404
1979	37,342	25,297	1,778	0	64,417
1980	42,929	22,514	3,877	122	69,442
1981	77,880	18,133	4,972	9,270	110,255
1982	43,433	66,781	18,014	3,092	131,320
1983	133,671	16,835	11,207	25,932	187,645
1984 2/	163,244	28,411	24,642	54,459	270,756
1985	84,149	91,957	78,250	24,338	278,694
1986 2/	36,838	48,472	146,496	3,055	234,861
30 Year					
Total	1,187,551	478,138	329,118	308,949	2,303,756
30 Year					
Average	39,585	15,938	10,971	10,298	76,792
% of					
Total	51.55	20.75	14.29	13.41	100.00

1/ Data source: Final IBM computer runs, 1957-1986 and processor catch reports.

2/ Preliminary data.

Appendix Table 22. Coho salmon catch by district for Lower Cook Inlet, 1957-1986. 1/

Year	Southern	Outer	Kamishak	Eastern	Total
1957	1,507	110	29	119	1,765
1958	1,713	83	0	0	1,796
1959	709	109	43	5,491	6,352
1960	1,237	574	28	853	2,692
1961	1,149	456	14	0	1,619
1962	2,095	1,893	11	3,728	7,727
1963	4,020	369	97	2,250	6,736
1964	8,905	431	115	9	9,460
1965	733	7	122	0	862
1966	4,807	357	247	0	5,411
1967	2,379	70	74	203	2,726
1968	4,671	106	101	5	4,883
1969	485	11	121	6	623
1970	3,705	243	220	692	4,860
1971	3,151	174	121	1,115	4,561
1972	1,283	17	31	903	2,234
1973	1,241	31	28	801	2,101
1974	3,054	28	2,915	517	6,514
1975	3,039	7	3,041	124	6,211
1976	1,905	0	1,111	200	3,216
1977	1,239	1,528	105	360	3,232
1978	4,318	45	1,584	582	6,529
1979	10,688	150	1,116	296	12,250
1980	11,568	16	2,495	426	14,505
1981	7,976	485	1,845	472	10,778
1982	7,165	92	38,685	950	46,892
1983	3,589	54	7,138	594	11,375
1984 2/	3,415	90	13,230	536	17,271
1985	4,259	3,210	2,024	835	10,327
1986 2/	3,095	5,052	9,935	770	18,852
30 Year Total	109,099	15,798	86,626	22,837	234,360
30 Year Average	3,637	527	2,888	761	7,812
% of Total	46.55	6.74	36.96	9.75	100.00

1/ Data source: Final IBM computer runs, 1957-1986 and processor catch reports.

2/ Preliminary data.

Appendix Table 23. Pink salmon catch by district for Lower Cook Inlet, 1957-1986. 1/

Year	Southern	Outer	Kamishak	Eastern	Total
1957	130,511	149,197	5,905	0	285,613
1958	209,798	739,768	0	200	949,766
1959	50,244	69,054	5,325	125	124,748
1960	209,989	381,375	11,563	8,720	611,647
1961	191,867	105,491	6,019	0	303,377
1962	564,050	1,684,023	219	49	2,248,341
1963	99,820	21,471	82,314	11	203,616
1964	266,412	767,743	20,719	813	1,055,417
1965	90,260	21,886	3,452	0	115,598
1966	177,544	398,751	2,945	0	579,240
1967	92,793	262,258	17,340	3,097	375,488
1968	154,033	191,691	198,253	41,464	585,441
1969	70,753	51,533	80,157	1	202,444
1970	208,114	302,831	23,113	40,226	574,284
1971	50,066	310,710	32,094	1	392,871
1972	9,126	1,005	342	18,190	28,663
1973	97,574	197,259	12,568	2	307,403
1974	48,875	1,678	48	0	50,601
1975	893,709	160,291	9,432	0	1,063,432
1976	99,817	93	1,112	35,423	136,445
1977	156,696	1,127,800	6,308	1,349	1,292,153
1978	251,761	70,080	982	29,738	352,561
1979	982,529	1,945,521	58,484	0	2,986,534
1980	478,019	154,041	101,864	155,779	889,703
1981	1,451,022	1,714,115	66,097	44,987	3,276,221
1982	296,556	67,456	43,871	143,639	551,522
1983	690,098	199,794	1,405	36,154	927,451
1984 2/	336,785	89,068	137,133	135,290	698,276
1985	518,898	618,222	194	92,403	1,229,717
1986 2/	542,521	401,755	423,774	40,243	1,408,293
30 Year Total	9,420,240	12,205,690	1,353,032	827,904	23,806,866
30 Year Average	314,008	406,856	45,101	27,597	793,562
% of Total	39.57	51.27	5.68	3.48	100.00

1/ Data source: Final IBM computer runs, 1957-1986 and processor catch reports.

2/ Preliminary data.

Appendix Table 24. Chum salmon catch by district for Lower Cook Inlet, 1957-1986. 1/

Year	Southern	Outer	Kamishak	Eastern	Total
1957	57,403	138,171	10,856	20	206,450
1958	24,096	100,386	0	0	124,482
1959	13,976	59,996	23,574	13,301	110,838
1960	4,100	67,187	44,328	467	116,082
1961	2,916	40,212	12,465	0	55,593
1962	9,078	126,767	43,404	10	179,259
1963	7,523	117,095	13,892	0	138,510
1964	11,529	269,514	42,280	12	323,335
1965	2,458	22,443	3,175	0	28,076
1966	28,754	87,620	12,688	0	129,062
1967	23,416	37,533	24,221	275	85,445
1968	4,403	20,398	49,461	872	75,134
1969	2,600	5,400	53,193	10	61,203
1970	8,174	118,746	96,605	633	224,158
1971	2,857	118,995	26,237	423	148,602
1972	4,936	43,490	26,374	743	75,543
1973	3,588	76,341	35,584	0	115,513
1974	2,275	11,931	4,554	0	19,210
1975	5,428	11,350	4,868	0	21,646
1976	1,517	412	48,848	45	50,822
1977	6,723	70,167	65,659	3,229	145,778
1978	5,525	19,224	48,669	100	73,518
1979	12,759	180,558	29,711	0	223,028
1980	4,605	32,246	35,921	720	73,492
1981	23,880	238,393	73,501	3,279	339,053
1982	18,446	62,877	108,946	7,698	197,987
1983	14,281	27,203	142,901	7,934	192,319
1984 2/	9,598	3,077	70,595	10,534	93,804
1985	5,509	11,844	8,134	5,146	30,638
1986 2/	5,560	11,701	61,670	3,757	82,688
30 Year Total	328,374	2,131,277	1,222,409	59,208	3,741,268
30 Year Average	10,946	71,043	40,747	1,974	124,709
% of Total	8.78	56.97	32.67	1.58	100.00

1/ Data source: Final IBM computer runs, 1957-1986 and processor catch reports.

2/ Preliminary data.

Appendix Table 2a. Chum salmon catch by district for lower 20th
Inlet, 1957-1986. 19

Year	Southern	Outer	Less Inlet	Range	Total
1957	57,403	138,171	1,088	30	200,480
1958	34,096	100,386	0	0	134,482
1959	13,976	59,986	12,374	12,301	110,437
1960	4,100	67,187	44,328	487	116,082
1961	3,916	40,312	11,488	0	55,723
1962	9,078	126,787	15,404	10	151,279
1963	7,323	117,092	19,482	0	133,897
1964	11,829	269,514	42,180	12	323,535
1965	3,488	22,443	2,175	0	28,106
1966	28,754	87,620	12,488	0	128,862
1967	32,416	37,533	24,321	279	94,549
1968	4,403	20,388	49,481	873	75,134
1969	2,600	2,401	22,192	10	27,203
1970	6,174	118,746	36,809	633	161,362
1971	5,857	118,930	52,237	423	177,447
1972	4,386	42,487	26,374	783	73,030
1973	2,588	78,341	32,284	0	113,213
1974	2,378	11,881	4,224	0	18,483
1975	8,428	11,320	4,888	0	24,636
1976	1,217	412	49,448	48	51,125
1977	6,723	70,187	1,089	2,129	79,929
1978	2,528	19,324	42,668	100	64,620
1979	12,789	180,328	12,711	0	195,828
1980	4,603	32,246	37,921	720	75,490
1981	22,880	138,383	12,301	3,278	176,842
1982	18,446	62,871	103,946	7,888	193,151
1983	14,281	27,203	142,901	7,934	192,319
1984 2A	9,298	2,072	10,929	10,234	32,533
1985	2,809	11,844	8,134	2,144	34,931
1986 2A	2,860	11,701	6,670	2,727	33,958
30 Year	328,374	2,131,277	1,122,403	39,208	3,741,262
30 Year	10,946	71,043	40,747	1,274	124,010
N of					
Total	8,78	86,97	32,67	1,28	100,00

2A Preliminary data.
Data source: Final INM computer runs, 1987-1988 and
processor output reports.